Designing and implementing a non-smoking policy at the university of Navarre, Spain

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DESIGNING AND IMPLEMENTING A NON-SMOKING POLICY AT THE UNIVERSITY OF NAVARRE, SPAIN

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Abstract

The aim of this study was to design and implement a non-smoking policy at a university and to recommend health promotion interventions based on the transtheoretical model and employee interest.

A combination of qualitative and quantitative research methods was used. A questionnaire was sent to a random sample of employees (N=641) to assess smoking habits, nicotine dependency, intention to quit, perception of norms, daily exposure to environmental tobacco smoke, and attitudes towards a non-smoking policy. To complement the survey data gathered, measurements of particulate matters and benzene were taken in several locations at the university. In addition, eight focus group discussions took place with a purposive sample of employees seeking positive ideas for implementing a successful policy, and reasons for their objection.

A response rate of 70.4% was obtained from 578 eligible employees. Survey results suggest that 25.7% university employees smoke. The majority of respondents supported a restrictive non-smoking policy (81.7%). Acceptance among active smokers was significantly lower (59.2% *vs* 89.3%). Smoking prohibition with the provision of smoking areas was the most favoured option (46.9%). Lack of compliance and the presence of persistent smokers were seen as potential obstacles for the implementation of a non smoking policy. Most of the smokers (73.6%) presented a low level of nicotine dependence. The application of the transtheoretical model of change to the sample under study suggests that the majority (59.6%) of smokers at the university were not considering quitting in the near future. Interest in availability of smoking cessation activities differed by stage of change.

Based on this research a non-smoking policy has been implemented at the University of Navarre. This project could result in an improvement on the future health of 1,900 university employees and 12,000 students. There is great potential for learning from this experience and for applying it to other settings where tobacco control efforts are needed.

Declaration

I confirm that no part of the material offered has previously been submitted by me for a degree in this or any other University. If material has been generated through joint work, my independent contribution has been clearly indicated. In all other cases material from the work of others has been acknowledged and quotations and paraphrases suitably indicated.

Mª José Duaso Ansó

15 of May 2004

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Finally I am grateful to my parents, Jesús and Fe, who have always encouraged me to fulfil my dreams even if this means that we will be separated. To my brother Gabi, and his wife Gemma, who welcomed me in their flat in London whenever I needed a break. To my boyfriend Thomas, thanks for all the love and support. His advice encouraging me to quit smoking not only changed my life but also led me to this fascinating area of research.

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List of abbreviations

AIDS	Auto Immune Deficiency Syndrome
ANOVA	Analysis of Variance
ASH	Action on Smoking and Health
ATSDR	Agency for Toxic Substances and Disease Registry
BPDE	Benzo(a)Pyrene Diol Epoxide
BTEX	Benzene, Toluene, Xylenes and Etilbenzene
CDC	Center for Disease Control and Prevention
CHD	Coronary Heart Disease
CINAHL	Cumulative Index to Nursing Allied Health Literature
COPD	Chronic Obstructive Pulmonary Disease
DNA	Deoxyribonucleic acid
ERLAP	European Reference Laboratory for Air Pollution
ETS	Environmental Tobacco Smoke
EU	European Union
FTND	Fagerström Test for Nicotine Dependence
FTQ	Fagerström Tolerance Questionnaire
IARC	International Agency for Research on Cancer
ISI	Institute of Scientific Information
MS	Mainstream Smoke
OSH	Office on Smoking and Health
PM	Particulate Matter
SD	Standard Deviation
SIDS	Sudden Infant Death Syndrome
SPSS	Statistical Package for Social Science
SS	Sidestream Smoke
Tukey's HSD	Tukey's Honestly Significant Difference
UK	United Kingdom
US	United States
USDHHS	United States Department of Health and Human Sciences
WHO	World Health Organisation

Chapter 1

Introduction

Every tobacco death is preventable.
Tobacco Free Initiative message and challenge.
World Health Organisation (WHO)

Tobacco smoking has been described as the greatest epidemic, the greatest medical disaster of the century (WHO, 2003a). Globally, an estimated 4.2 million people die each year from tobacco related illness, compared to 2.7 million from malaria and 2.8 million from Acquired Immune Deficiency Syndrome (AIDS) (WHO, 1999). Apart from deaths caused by malnutrition (5.9 million in 1990), and violence and injury (5.8 million in the same year), tobacco is responsible for more deaths than any other cause (WHO, 1999). Cigarette smoking is a primary cause of many cancers, respiratory disease, and coronary heart disease. About one in two among persistent smokers die from the habit, exceeding by far any other addiction, exposure, or injury (Peto *et al.*, 1992). Unless successful strategies to promote smoking cessation are carried out, predictions estimate ten million annual deaths from about 2030 (Murray and Lopez, 1996).

The dangers of passive smoking are also well established. The International Agency for Research on Cancer has declared tobacco smoke to be carcinogenic to humans (IARC, 2002). There is compelling evidence that regular exposure to environmental tobacco smoke (ETS) results in an increased risk of lung cancer and other pulmonary diseases, coronary heart disease, and childhood disorders such as asthma or bronchitis (United States Department of Health and Human Services (USDHHS), 1986).

Smoking cessation and reducing exposure to ETS are therefore a public health challenge. The complex nature of tobacco use requires a comprehensive approach which integrates elements operating at different levels. Early approaches to tobacco control assumed that, by providing information about the dangers of smoking, a large number of smokers could be persuaded to quit. However, the addictive nature of nicotine makes smoking cessation extremely difficult, especially for the heavy user. Subsequent research has clearly demonstrated that smoking behaviour is influenced by the legal, social, economic, and physical environment (WHO, 1996; USDHHS, 2000). The recognition that information alone would not eliminate tobacco use led to the development of public health strategies that address both the smoker's social and cultural environment as well as programmes to assist individuals in quitting.

The progress towards a smoke-free society is influenced by national and international initiatives; however, local community interventions have a great potential (Villalbí, 1999). As Cummings (2000) suggests, tobacco control movement should follow the old adage: "think global, act local". It is important to adapt interventions to the unique needs of a community and to contribute to changing the social norms that govern tobacco use.

The workplace is an almost ideal setting for health promotion. It provides access to a large number of smokers at higher risk who are generally harder to reach through other channels. Restrictions on smoking in workplaces, public buildings, transportation systems, and other enclosed areas have become increasingly common in the United States, United Kingdom and some other developed countries. In Spain, however, measures to protect non-smokers are less prevalent (Serrano, 1993). Lack

of smoking regulations is surprising, since the number of persons affected by involuntary smoking is much larger than the number affected by any other environmental agent already under regulation to limit exposure (Brenner *et al.*, 1997).

The majority of adult Spaniards spend half of their waking hours in the workplace. For an individual who lives with non-smokers, the workplace is often the major source of ETS exposure, which may continue for 40 to 45 hours per week during a 45-year working lifetime (Hammond *et al.*, 1995). Research suggests that a non-smoker living or working in a very smoky environment over a prolonged period is 20-30 per cent more likely to develop cancer than a non-smoker who does not (Department of Health, 1998a).

Most studies report that increased restrictions or smoking bans are well received and decrease cigarette consumption - especially at work - and that restrictions improve reports of air quality and reduce passive smoke exposure (Brownson *et al.*, 2002; Fichtenberg and Glantz, 2002). Evidence exists that benefits from workplace smoking reduction efforts go beyond cost savings related to health care (Abrams *et al.*, 1994; Chen *et al.*, 2001). These benefits include higher productivity, greater employee satisfaction, and improved public image for companies. The costs of smoking to companies also accrue from time lost to absenteeism, cleaning costs, fires, damage to furniture and equipment, and poor job performance related to such factors as elevated carbon monoxide levels, eye irritation, and sickness while on the job (Frankish *et al.*, 1997).

The WHO (2003b) has adopted a Framework Convention on Tobacco Control to protect present and future generations from tobacco consumption and exposure to tobacco smoke. This resolution calls for the widest possible international co-operation and emphasises the special contribution of academics and health care institutions to tobacco control efforts. Among other strategies, the resolution asks each party to adopt and implement effective measures to provide protection from exposure to tobacco smoke in indoor workplaces. Equally, comprehensive educational and public awareness programmes should be carried out on the health risks of tobacco consumption and exposure to ETS.

Despite the implications of the smoking problem and the potential benefits of non-smoking policies, few studies have focused on the implementation of such policies at university settings. Universities, especially those imparting health-related disciplines, can contribute to the health of the wider community. Students develop independence and learn life skills at university. Academic and non-academic staff spend an important part of their lives at work. More research is therefore needed to give insight into successful strategies for countries like Spain - countries without a long record of smoking control efforts.

1.1. AIM AND OBJECTIVES OF THE STUDY

The overall aim of this research is to increase understanding of the issues and concerns around designing and implementing non-smoking policies in workplaces, located in settings like Spain, where smoking prevalence is high and the habit is still socially accepted.

More specifically this research has five objectives:

1. To assess attitudes to, knowledge about and exposure to ETS among employees in a university in Spain.
2. To assess attitudes towards smoking restrictions and the anticipated impact of a smoking ban on the university staff.
3. To evaluate the current situation in relation to smoking prevalence and attitudes towards smoking cessation in a university in Spain using the transtheoretical model of change.
4. To design a protocol for policy implementation addressing tobacco use and smoking cessation based on the needs of the university community.
5. To implement a non-smoking policy based on research evidence.

To achieve these goals, a combination of qualitative and quantitative methods of research was used. The research took place in the University of Navarre, a private university situated in the North of Spain. A questionnaire was sent to a random

sample of 641 employees; focus group interviews were carried out with a purposive sample of smokers and non-smokers, and contamination measurements were taken in different university locations to assess exposure to ETS.

The ultimate contribution of the current study may be to improve the understanding of the problems and challenges that other universities might face when implementing non-smoking policies in the future. Equally important is that this study will probably improve the health of the employees of the University of Navarre by reducing their exposure to ETS and increasing smoking cessation among smokers.

1.2. OUTLINE OF THE THESIS

This thesis is organised in nine chapters. The following one serves to set the whole study in context by reviewing literature pertaining to the health effects of active and passive smoking. Most relevant models used to facilitate health behaviour change are evaluated. The transtheoretical model of change is selected as a framework to plan behaviour change interventions. The chapter ends with a review of the recently published literature about the implementation of workplace smoking policies, raising the need for more research on this matter.

The methodology in chapter 3 details the way in which the research for this study was carried out in order to achieve its aims and objectives. Chapter 3 outlines aspects of the methodology such as: setting, design, population and sample, variables, the pilot study, data collection, analysis, limitation of the methodology, and ethical issues.

In chapter 4 the main findings of the questionnaire survey, group interviews, and environmental tobacco measurements are presented. Special emphasis is given to the socio-demographic characteristics of the participants, smoking prevalence, and to the response rate. A section is dedicated to explaining the focus group dynamics and the main topics which emerged during the group discussions. Results are described and discussed in more detail in chapters 5, 6 and 7.

Chapter 5 analyses the baseline situation in relation to passive smoking at the University of Navarre. Results on self-reported exposure to ETS among employees, levels of contamination at the university buildings, and attitudes towards passive smoking are presented and discussed.

In chapter 6 the transtheoretical model of change is used as a framework theory to discuss university employees' readiness to change behaviour and to plan a smoking cessation strategy tailored to their needs.

In chapter 7 data collected on the attitudes of employees towards a future non-smoking policy is presented. Employees' reasons to support or not support smoking restrictions are explored. Perceived advantages of having a non-smoking policy, and possible obstacles to the implementation process, identified during the focus group interviews, are discussed. A final policy tailored to the university community's needs is proposed based on the results of this study.

Chapter 8 explains how the implementation process took place, what the obstacles encountered were and how they were overcome. This chapter also provides a tentative evaluation of the policy three months after the implementation took place.

The final chapter summarises the most important findings from this study, highlighting their implications. The chapter ends by listing several further research projects which have already been taken up.

Chapter 2

Literature review

2.1. INTRODUCTION

The aim of this chapter is to set the whole of the study in context. First, the history and evolution of the smoking epidemic in the world is explained, followed by an analysis of the situation in Spain in terms of smoking prevalence and tobacco control measurements. Second, current evidence on the health consequences of active and passive smoking is presented, preparing the ground for the justification of non-smoking policies in the workplace. The subsequent section is an evaluation of different theories that can be used as a framework to plan behaviour change interventions. The chapter ends with a review of the recently published literature about the benefits and effects of implementing non-smoking policies in the workplace. Five studies have focused on implementing such policies in university settings. The strengths and contributions as well as their limitations are analysed, highlighting the need for more research in this matter.

2.2. THE SCALE OF THE SMOKING PROBLEM

2.2.1. A global perspective

The seafarers who travelled with Christopher Columbus were the first Europeans to see human beings smoking tobacco. In fact, a Spanish citizen, Francisco Hernández

Boncalo, in the 16th century, was the first to bring tobacco seeds to Europe, believing they had healing powers (Carrión, 1997). Although people have used tobacco for centuries, cigarettes did not appear in mass-manufactured form until the end of the 19th century, when James Bonsack invented the cigarette making machine (Godman, 1998). Since then, the practice of cigarette smoking has spread world-wide on a massive scale.

Figure 2.1 shows cigarette consumption per capita in the United States during relevant historic events. Consumption per capita in the USA increased from 54 cigarettes per year in 1900 to 4345 cigarettes per year in 1963. It can be observed that there have been periods of stagnation of consumption such as during the Great Depression. During World War II tonnes of cigarettes were sent to soldiers in what was seen as a patriotic gesture, but in fact, the tobacco industry knew that it was investing in future customers who would, after the war, continue their smoking habit.

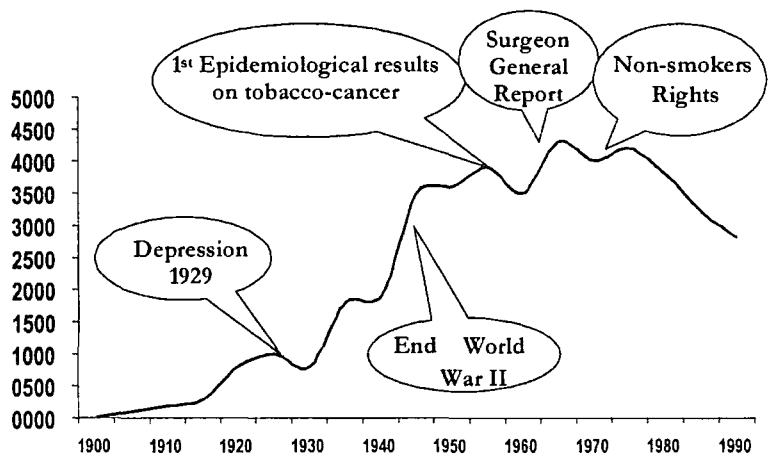

Figure 2.1 Cigarette consumption per year per capita in USA during relevant historic events (Novotny *et al., 1992)*

A breakthrough in the fight against tobacco was the discovery and publication of the first epidemiological results on smoke and lung cancer (USDHHS, 1964). But it was the publication outlining the harmful effects of ETS exposure, and recognising non-smokers' rights, which marked the beginning of the tobacco consumption decline. Nowadays, smoking prevalence among American adults is at its lowest level the last thirty years, and there is unprecedented popular support for tobacco control measures. A similar profile can be observed in Northern European countries, Canada and Australia where tobacco consumption has been declining for a sustained period.

Conversely, in the developing world the epidemic curve of cigarette use is still on the upswing (Corrao *et al.*, 2000).

Even though smoking evolution has a different pattern in each society, experts from the WHO have pointed out that the spread of the tobacco epidemic in the developed countries has followed roughly four stages (Lopez *et al.*, 1994). Using an epidemiological perspective, each stage is characterised by changes in three variables: smoking prevalence, tobacco consumption (amount per adult/per year), and mortality due to smoking.

The following diagram (Figure 2.2) describes the four phases of the tobacco epidemic. Men start smoking earlier and smoke more than women, as shown by the increase in the percentage of male and then female smokers. Later, the deaths from smoking begin to appear, first in men, and then in women, and this continues for several decades after smoking prevalence begins to fall. The entire process takes approximately 100 years. Nearly all countries can be placed at some stage on this continuum.

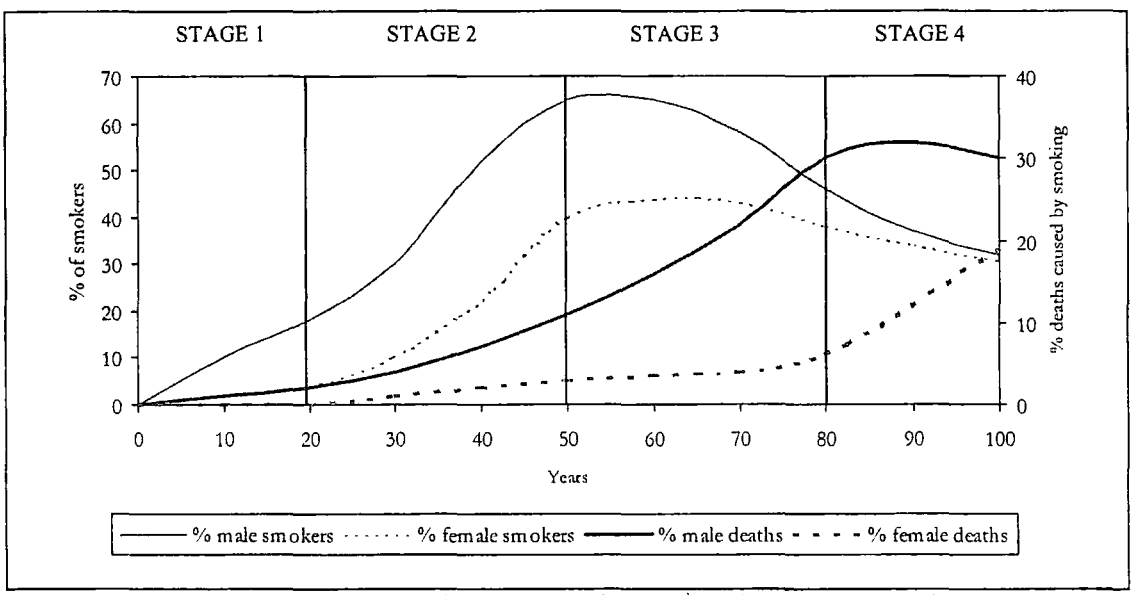

Figure 2.2 Descriptive model of the tobacco epidemic. Adapted from (Lopez *et al.*, 1994)

This epidemiological model helps us to predict future trends based on international observations. Although different countries might exhibit different variations, this is the general picture:

1) Stage I. The first stage defines how the epidemic started in any population. At the beginning, the consumption is relatively low among men (15 per cent) and very low among women (<5 per cent). The social conditions at this stage do not favour female consumption. This stage lasts approximately ten to 20 years. Smoking is well accepted and smoking restrictions do not exist because there are other public health priorities, such as malnutrition and infectious diseases. Some isolated deaths attributed to tobacco might appear at the end of this phase. In general morbidity and mortality caused by tobacco are still not evident. Example of countries currently at this stage would be developing countries, especially those in sub-Saharan Africa, such as Nigeria, where 15.4 per cent of the men and 1.7 per cent of the women are regular smokers, or Rwanda with 7 per cent and 4 per cent respectively (Corrao *et al.*, 2000).

2) Stage II. Smoking prevalence increases very quickly among men, reaching levels between 50 per cent and 80 per cent, with a relatively small number of ex-smokers. Smoking prevalence also increases among women, but more slowly than among males. The first restrictions and policies to control consumption appear during this phase. This stage lasts around 20 to 30 years. At the end of this stage smoking is the cause of ten per cent of all deaths, with the number of lung cancer cases ten times greater than in the previous stage. Currently at this phase are countries in Asia like China, with a male smoking prevalence of 66.9 per cent and a female of 4.2 per cent, or Cambodia with 66.0 and 8.0 per cent respectively. Areas of Latin America (e.g. Mexico 51.2 per cent and 18.4 per cent respectively) and some countries in Africa, like Kenya, where 66.8 per cent of men smoke and 31.9 per cent of women do so, are also at this stage (Corrao *et al.*, 2000).

3) Stage III. Smoking prevalence among men begins to decrease. There is a greater number of ex-smokers, especially among those who are older and have higher levels of education. At the end of this stage, which lasts approximately 30 years, the number of female smokers also starts to reduce. Observations from countries like USA and Canada, where smoking among women has been common for a long time, suggest that the maximum prevalence reached by women is around 35-45 per cent, and tends to be particularly high among younger women. Mortality caused by tobacco reaches 30 per cent and particularly affects men between 30 and 69 years

old. During this third stage there is a more favourable social climate for restrictions and tobacco control; smoking starts to be seen as less socially acceptable. There is more public awareness about the health risks of smoking. Smoke-free environments start to appear. Countries in the South of Europe such as Spain (with a male smoking prevalence of 42.1 per cent and a female of 24.7 per cent) or Greece (47 *vs.* 29 per cent respectively) are currently at this stage. Eastern European countries such as Ukraine (51.1 *vs.* 19.4 per cent) or Slovakia (58.1 *vs.* 30.0 per cent) can also be found at this phase (Corrao *et al.*, 2000).

4) Stage IV of the epidemic is characterised by further declines in smoking prevalence in both sexes. Mortality related to smoking among men will reach its highest peak at the beginning of this period, causing around 30-35 per cent of all deaths. Within a decade or so after reaching its peak, mortality will decrease below 30 per cent and lung cancer will also be less frequent. Concerning women, smoking-attributable mortality will also reach its peak during this period, but with lower figures (20-25 per cent) than those observed among men. Because women started smoking later than men, and prevalence was not as high as among the male population, health consequences will be less intense and belated. During this stage smoke-free environments are established, including in the work-place, with the social climate more favourable for restrictions and tobacco control. The USA, where 25.7 per cent of the men smoke and 21.5 per cent of the women do so, Canada (27.0 *vs.* 23.0 per cent), and Northern European countries such as Sweden (17.1 *vs.* 22.3 per cent) are at this stage (Corrao *et al.*, 2000).

Not all the countries have followed the previously described evolution during the same historical period. For example, at the end of the 1980s, Southern European countries such as France, Italy, and Spain were at the beginning of the third stage, while other countries of Northern Europe were starting the fourth stage (Lopez *et al.*, 1994). This model not only presents a panoramic view of the current problem but can also help to estimate future trends. This is very important in terms of policy planning. It can be learnt from other countries' experiences that taking measures to prevent and control tobacco can modify the evolution of the epidemic. For instance, in the United Kingdom (UK), where the smoking prevalence peak was reached

before the control measures started, the smoking-attributable mortality went up to 34 per cent in 1974. In Sweden, the situation was more favourable, as tobacco consumption started later and simultaneously with measures to control it, and the maximum smoking-attributable deaths only 12 per cent in 1984 (Barrueco and Hernandez, 2001).

The authors of this model point out that because the consequences of cigarette smoking are not immediate, it is very important to find out which stage each country is at, and initiate and /or sustain preventive measures accordingly, in order to prevent millions of unnecessary premature deaths (Lopez *et al.*, 1994).

2.2.2. The situation in Spain

2.2.2.1. Smoking prevalence

According to current data on prevalence and deaths attributable to smoking, Spain is probably between stages III and IV of the previously described tobacco epidemic model (Regidor *et al.*, 2001). The process in Spain however has had special economic, political and cultural characteristics. The second stage was slowed by economic factors (Villalbí and Ariza, 2000). For many years Spain had a very high smoking prevalence with a relatively low consumption per capita. Because of the economic situation, many smokers could not smoke as much as they wanted. It was not until the 70s, when the economic constraints were lessened, that consumption increased significantly, from an average of 1500 cigarettes per habitant, per year, up to 2500 (Ministerio de Sanidad y Consumo, 1999a). The social changes during the past five decades have also contributed to the later onset of the epidemic in Spain compared to other European countries. Smoking among females was rare before 1960 due to rules of decorum and gender-appropriate behaviour in the pre-democratic Spain (Schiaffino *et al.*, 2003). The political and social change in the 70s increased women's access to higher education and to the labour market. There was a growing social acceptance of women's smoking and this was promoted by the tobacco industry who linked the idea of smoking with self-determined, young, healthy and vital women (Salvador-Llivina, 2000).

During the past decade there have been opposite trends in the smoking prevalence among men and women (Regidor *et al.*, 2001). Figure 2.3 shows the trends of cigarette consumption from 1987 to 1997, and reveals an important reduction among men, from 55 per cent to 44.8 per cent, in contrast to an increased number of women smoking, from 23 per cent to 27.2 per cent.

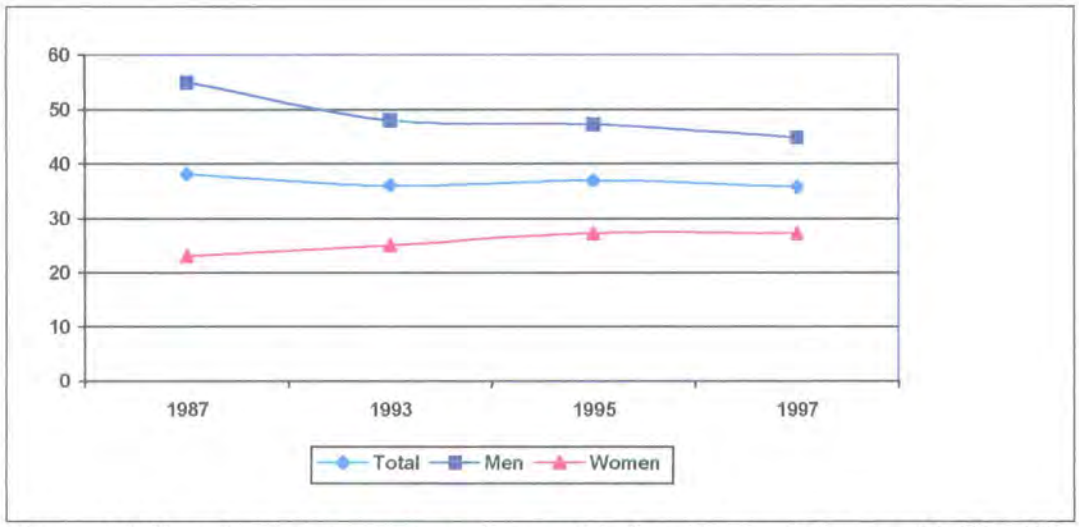

Figure 2.3. Overall smoking prevalence (per cent) in Spanish population over 16, 1987, 1993, 1995, 1997. (Ministerio de Sanidad y Consumo, 1999a)

Spain, Italy, Greece, Portugal, Luxembourg, and Austria are the only countries in the European Union (EU) where the percentage of female smokers is still growing. Figure 2.4 presents data on smoking prevalence among adult men and women in the European Union. Over the last few years, overall smoking prevalence in the European Union has shown a slow decline. In general, smoking prevalence is higher among men, except in the case of Denmark, the UK, and Ireland where prevalence is similar for both genders. Sweden presents the opposite trend, with women smoking more than men, but tobacco consumption is relatively low.

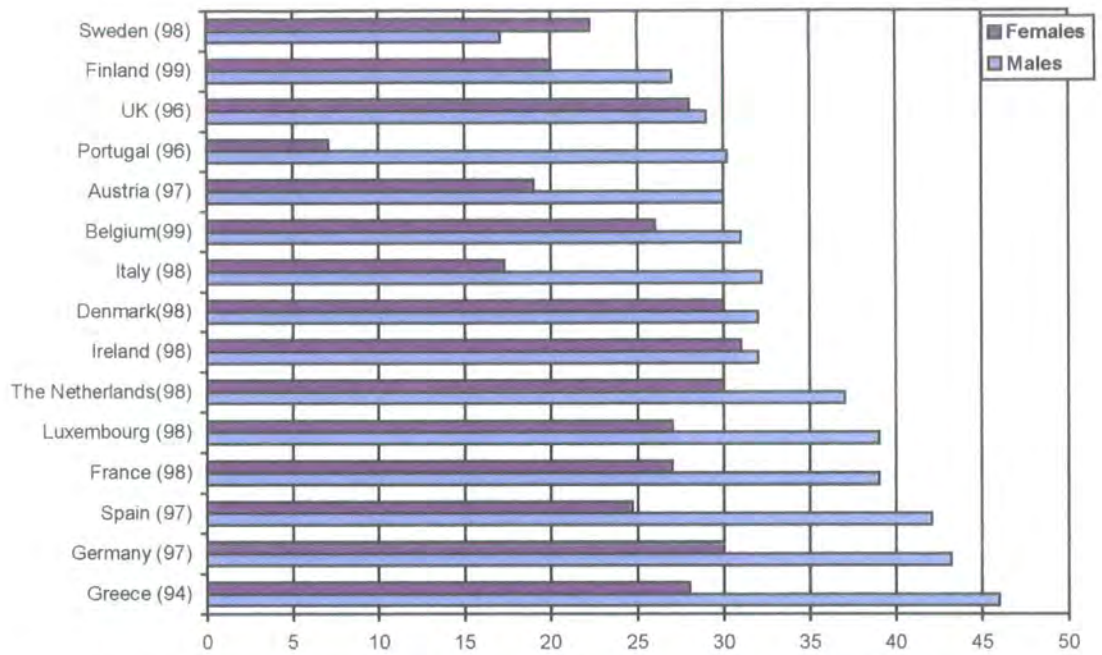

Figure 2.4 Smoking prevalence (per cent) among adult men and women in the EU (Corrao *et al.*, 2000)

The overall national smoking prevalence in Spain is 35.7 per cent, but this figure varies among regions. Navarre, the region where this study took place, has a prevalence of 32.5 per cent (Departamento de Salud Gobierno de Navarra, 1999). The latest regional ranking on smoking prevalence available (from 1993), placed Navarre in fourth place after Cantabria (42 per cent), Murcia (39 per cent), and the Basque Country (38 per cent) (Carrión, 1997).

One issue to be highlighted is the high smoking prevalence among Spanish health professionals. A national study carried out in 1985 pointed out that 31 per cent of doctors smoked in front of their patients, and 50 per cent of them allowed patients to smoke in the waiting rooms (Centro de Investigaciones Sociológicas, 1986). The situation is likely to have changed, and smoking has not been permitted in health establishments since 1988. A more recent survey carried out among health workers in INSALUD, the Spanish *NHS*, estimated that 38.9 per cent of health professionals are smokers, 34.7 per cent of the doctors and 43.2 per cent of the nurses, more than the overall prevalence in Spain (35.7 per cent) (Ministerio de Sanidad y Consumo, 1999b). The high smoking prevalence among Spanish health professionals is an important problem to tackle. Research has shown that doctors and nurses who

smoke are less likely to give advice on smoking, and their messages are seen as less credible (Dawley *et al.*, 1981; Chapman, 1995). This matter should be given top priority, and Spanish educational settings where health professionals are trained should take the responsibility to provide leadership in the area of cigarette-smoking cessation and indoor-smoking elimination.

2.2.2.2. Tobacco control

Tobacco control in Spain has been affected by the Government monopoly of the tobacco industry. The privatisation of the tobacco industry only started in 1991. Until then, the Government policy towards tobacco had been influenced by economic rather than by health factors. This was aggravated during Franco's dictatorship (1939-1974). In order to reduce tobacco imports and support the agricultural sector, the Government promoted restructuring of agricultural activities from the 1940s onwards, changing from traditional crops to tobacco. Despite this protectionist policy, imports of tobacco continued to increase and, as result, there was a constant increase of the global tobacco availability in Spain (Salvador-Llivina, 2000). The publication of the health consequences of smoking in the late 1960s did not have any practical effect in Spain, in contrast to what happened in the democratic countries, where governments were driven into tobacco control (Villalbí and Ariza, 2000).

The transition to democracy also affected tobacco control policies in Spain. During the first years, there were other priorities in the political arena that delayed the development of an infrastructure for tobacco control. The effect of the dictatorship marked Spanish social attitudes and norms. For several generations, smoking was seen as a symbol of progress and freedom, and people would identify any measures attempting to control consumption as a return to the authoritarian regime. The tobacco industry took advantage of this situation. Over several years, every time there was any news on the harmful effects of smoking, an "independent" public person would recall the public opinion that initiatives trying to control smoking in public places were an attack on freedom (Salvador-Llivina, 2000). Those comments never mentioned how smoking affects freedom. They did not talk about the pressure to start smoking that children and teenagers experience, nor about how addictive

smoking is; that even though 60 per cent of Spanish smokers would like to quit, they find it very difficult to do so (Ministerio de Sanidad y Consumo, 1999a).

The first legislation on tobacco control in Spain dates from 1978, regulating advertising for tobacco and alcoholic beverages (for more details on legislation see appendix 1). Subsequently, tobacco advertising was banned from public television and radio in 1982, and from cinemas and billboards and bus shelters situated less than 200 meters away from schools or colleges in 1995. Banning advertising has been shown to be an effective strategy to protect teenagers from the pressures that the tobacco industry exerts (Simpson, 2002). On 2 December 2002, after several attempts, the EU approved a total ban on advertising, which will take place from January 2005 onwards [1].

Since 1992, tobacco companies have been required to specify the chemical constituents of their cigarettes. Health warning messages were made compulsory in 1994. At that time, the maximum nicotine content for one cigarette was 1.3mg, and the maximum tar content was 15 mg. Cigarettes classified as "low nicotine and tar" had a maximum of 0.8 mg of nicotine and 12mg of tar. A new European regulation will come into force on 31 December 2003, banning the term "light", and reducing the maximum nicotine and tar contents to one and ten mg respectively[2]. This is a big step in tobacco regulation. During the past decades, many smokers have shifted from high-nicotine and high-tar cigarettes to lower yield brands, believing that "light" cigarettes are less addictive and less harmful (Etter *et al.*, 2003). However, there is no evidence that current lower yield cigarettes reduce the risk of cancer or cardiovascular and pulmonary diseases compared to regular cigarettes. Smokers compensate for the different nicotine and tar levels by blocking ventilation holes and by modifying their inhalation patterns. The prohibition on "light" and "ultra-light"

[1] Directive of the European Parliament and of the Council on the approximation of the laws, regulations and administrative provisions of the member states relating to the advertising and sponsorship of tobacco products EU 2001/0119/COD

[2] Directive 2001/37/EC of the European Parliament and of the Council of 5 June 2001 on the approximation of the laws, regulations and administrative provisions of the Member States concerning the manufacture, presentation and sale of tobacco products

labels will hopefully avoid misinterpretation and will increase smokers' intentions to quit smoking as they will perceive that there are no "safe" cigarettes (Kozlowski *et al.*, 1998).

Sales to minors, under 16, are prohibited. Vending machines are restricted to enclosed places and the machines must display health warnings. Minors are not allowed to use the vending machines and a sign stating so is required. As to the place of sale, tobacco sales are banned in places where smoking is prohibited such as schools or health establishments.

Accessibility and prices are highly related to tobacco consumption. Evidence from countries of all income levels shows that price increases on cigarettes are highly effective in reducing demand. Higher taxes induce some smokers to quit and prevent other individuals from starting. It has been estimated that a price rise of ten per cent on a pack of cigarettes would reduce demand for cigarettes by about four per cent (WHO, 2002a). Current EU rules set excise duty at a minimum of 57 per cent of the retail price in the most popular price category in each country, and allow wide variation in price. For instance, British taxes on the most popular cigarettes are almost four times the Spanish level. Spain, Greece, Italy, Portugal, and Luxembourg, are the EU countries with the lowest taxes on tobacco.

The rights of non-smokers are formally recognised under Spanish law, which states that the right to health of the non-smoker always precedes the right of smokers to smoke. Current national legislation bans smoking (except in designated areas) in public institutions for children under 16, health centres, and educational establishments. Smoking is also restricted in public administration premises to which the public has direct access, areas where food is prepared, exhibition halls, reading rooms, enclosed commercial premises, theatres, cinemas, sports halls, and lifts. Smoking is prohibited in public transport such as urban and long distance vehicles, school transport, medical transport and domestic flights of less than 90 minutes. In workplaces smoking is not permitted if a greater risk to the health of workers exists through the combination of harm caused by tobacco and industrial contamination. The law also bans smoking in any area where pregnant women work.

This long list might give the impression that tobacco control measures in Spain are thorough. However, compliance with these norms has been reported to be low. A study carried out in 1998, ten years after the legislation on smoking in public places came into effect, found that smoking restrictions were violated in almost 50 per cent of the places surveyed (Fundación Grupo Eroski, 1998). The authors visited, on two separate occasions, a total of 225 places in nine Spanish regions where, according to the law, smoking was prohibited. Failure to comply with the law was absolute in train stations, airports, state universities and Government buildings. They observed people smoking in 62 per cent of the hospitals surveyed. Greater compliance was found at museums, on public transport, and at petrol stations, but cases of non-compliance were still spotted. Another study carried out on Barcelona's underground railway, found users smoking in 87 per cent of the stations observed, and discovered cigarettes butts in 97.5 per cent of them (Nebot *et al.*, 2001).

The problems Spanish employees face in the workplace are twofold. On the one hand, the current legislation is insufficient as it only protects pregnant women and those who work with inflammable or dangerous substances. On the other, compliance with existing regulation is low. Future regulations need to ensure a healthy environment for all employees and should adopt specific measures to improve compliance.

In contrast with countries like Belgium, Denmark, Finland or Sweden, health promotion and education initiatives in Spain are not nationally legislated, but left to voluntary provision (Corrao *et al.*, 2000). Some companies in Spain have initiated campaigns to become smoke-free together with smoking cessation activities but the numbers of such are still low (Serrano, 1993; Nerin *et al.*, 2002). Because workers spend a substantial proportion of their time at work, environmental tobacco exposure in the workplace may pose a risk to their health. Initiatives to protect employees are therefore needed.

In February 2003 Navarre's Government enacted a new Law on Tobacco Control and Prevention[3]. This pioneering regulation in Spain has established a closing date for workplaces, educational centres, and other public places. By February 2005 all working places and universities in Navarre should be smoke-free.

2.2.3. Smoking health impact

Smoking is estimated to have caused three million deaths in the world in 1990, rising to 4.023 million deaths in 1998 (WHO, 1999). Looking ahead to 2020, the picture is expected to change dramatically. If the current smoking prevalence figures are not reduced, it is estimated that tobacco will become the largest single health problem, causing an estimated 8.4 million deaths annually, and reaching ten million annual deaths in about 2030, with 70 per cent of these deaths occurring in developing countries (Murray and Lopez, 1997).

Smoking represents a heavy burden of avoidable deaths in Spain. In 1998, 55,613 deaths were attributable to smoking: 16 per cent of all the deaths among adults aged 35 or over (Banegas *et al.*, 2001). That is one out of four deaths in males and one in forty deaths among females. Two thirds of the attributable mortality corresponded to deaths due to lung cancer, chronic obstructive pulmonary disease, ischemic heart disease, and stroke. Smoking attributable mortality has been increasing during the past decades and projections for the future predict a higher increase unless effective control programmes take place (Banegas *et al.*, 1993).

Smoking cuts people's life expectancy. The 1998 White Paper on tobacco emphasises:

> Half of all who continue to smoke for most of their lives die of the habit; a quarter before the age of 69 and a quarter in old age, at a time when average life expectancy is 75 for men and nearly 80 for women.

[3]Navarre's Government. Regional law to prevent tobacco consumption, protect the environment and promote health at the workplace. Ley Foral 6/3003 14 de Febrero.

> For every 1,000 20-year old smokers it is estimated that one will be murdered and six will die in motor accidents, but 250 will die in middle age from smoking and another 250 will die in older age from smoking.
>
> (Department of Health, 1998b, p.7)

The effects of tobacco on health have been well known since the first USDHHS report was published almost 40 years ago (USDHHS, 1964). Briefly, smoking causes a wide range of diseases, including many types of cancer, chronic obstructive pulmonary disease, coronary heart disease, stroke, peripheral vascular disease, and peptic ulcer disease. The following section presents in more detail the epidemiological evidence of the illnesses related to tobacco consumption.

2.2.3.1. Respiratory disease

Chronic obstructive pulmonary disease (COPD) encompasses a wide variety of disorders, including chronic bronchitis, chronic asthma, emphysema, bronchiectasis, immunoglobulin deficiency, and cystic fibrosis. They all have in common chronicity and airflow obstruction. The vast majority of cases, however, consist of chronic bronchitis and emphysema. Smoking is overwhelmingly the main cause of chronic obstructive pulmonary disease. In Spain, COPD is the fourth main cause of death (Martínez de Aragón and Llácer, 2000). Mortality associated to COPD is directly related to the number of cigarettes per day and the starting age of smoking (Jimenez-Ruiz *et al.*, 2001). Giving up cigarettes is the most effective treatment at any stage of the illness. Individual, family and community efforts to promote smoking cessation are essential to prevent COPD.

2.2.3.2. Cardiovascular disease

Smoking causes coronary heart disease (CHD), and is one of the main independent risks for myocardial infarction. Smoking also increases the risk of heart attack recurrence among survivors of myocardial infarction (Rea *et al.*, 2002; Serrano *et al.*, 2003). Cigarette smoking contributes to acute ischemic and occlusive events, and to the development of coronary atherosclerosis.

Besides, smoking has been considered as a significant, independent contribution to the risk of cerebrovascular disease. The risk is dependent upon the amount of cigarettes smoked, is consistent for all subtypes of stroke, and is strongest for subarachnoid haemorrhage and cortical ischemic stroke caused by arterial atherothromboembolism. Prospective studies have shown that cigarette smokers have two to three times the risk of stroke compared with non-smokers (Hankey, 1999).

Smoking is also related to atherosclerotic peripheral vascular disease, which causes substantial mortality and morbidity. Complications may include intermittent claudication, tissue ischemia and gangrene and ultimately the loss of the limb (USDHHS, 1989; Powell, 1998). Research also suggests that the mortality rate for aortic aneurysm is two to eight times greater in cigarette smokers than in non-smokers (Powell *et al.*, 1996).

2.2.3.4. Tobacco and cancer

In 1950, Sir Richard Doll and Professor Bradford Hill published a paper that has become a public health classic, demonstrating the association between smoking and lung cancer (Doll and Bradford Hill, 1950). The study was commissioned by the Medical Research Council in order to investigate the continued rise in what had once been a rare form of cancer. They conducted a case-control study, and after recruiting 709 pairs of lung cancer and control patients, it became very clear that the lung cancer patients were distinguished from control ones by being lifelong smokers. When asked about his initial hypothesis, Doll explained (1998, p.133): "I was convinced it was environmental - something to do with roads, most probably the tar - or, just possibly the diesel fumes," he replied, "and was staggered by our unexpected findings". The results were received with scepticism (Berkson, 1955), even though at that time similar studies, with variable quality, were available from Germany, the Netherlands, and the USA (Wynder and Graham, 1950; Doll, 1998). Bradford Hill and Doll decided to conduct another study, using a more widely accepted method of investigation. They carried out a large cohort study, using

doctors as subjects because of their interest, motivation and ability to describe their smoking habits more accurately. Within two and a half years, the results of the cohort study confirmed those predicted by the case study: smoking was undoubtedly related to carcinoma of the lung (Doll and Bradford-Hill, 1954).

Many more studies have been published since (e.g. IARC, 2002; Kuper *et al.*, 2002), and there is now sufficient evidence for causal association between smoking and cancer of the oral cavity (including lip and tongue), nasal sinus, pharynx, and larynx. In the urinary tract, smoking has been shown to be a major cause of carcinomas of the ureter, kidney, and renal pelvis. There is association between cigarette smoking and esophagus, pancreas, liver, and stomach cancer. Myeloid leukaemia in adults has also been causally related to smoking. In women, tobacco increases the risk of cervical cancer. There is also an established association between endometrial cancer and tobacco use, but in this instance, smoking substantially reduces the risk of endometrial cancer (IARC, 2002; Terri *et al.,* 2002). The latest reviews based on current evidence suggested that it is unlikely that an association exists overall between tobacco use and cancer of the breast, prostate, brain, skin, or testicles, or soft tissue sarcoma, lymphoma, or melanoma (Kuper *et al.*, 2002).

Cigarette combustion releases over 4,000 chemicals, including more than 50 established or identified carcinogens such as tar, ammonia, carbon monoxide, oxides of nitrogen, and benzopyrene (Cheung and Wooff, 2001; California Environmental Protection Agency, 1999). It has been suggested that these may increase the risk of cancer by causing mutations that disrupt the cell cycle regulation, or through their effect on the immune or endocrine systems (Kuper *et al.*, 2002).

In industrialised countries, tobacco is the first cause of cancer, associated with 30 per cent of all malignant tumours (Murray and Lopez, 1997). In Spain in 1998, 91 per cent of all lung cancer deaths among males were attributable to smoking, and 37.5 per cent among females (Banegas *et al.*, 2001). The magnitude of the disease is normally expressed by the estimated relative risk. This measure shows the probability that an event will occur in smokers divided by the probability of the event occurring among non-smokers (Last, 1995). The risk of dying from lung cancer is more than 22

times higher among men who smoke cigarettes, and about 12 times higher among women who smoke cigarettes compared with never smokers (Novotny and Giovino, 1998). The relative risk for cancer in general among smokers is 13 (USDHHS, 1989). This is a dose-response association (De Irala and Martínez-González, 2001). It has been estimated that a male who smokes 20 cigarettes per day for 20 years can end up having a relative risk of cancer between 60 and 70 (Doll and Peto, 1981).

2.2.3.5. The benefits of smoking cessation

Most of the above health risks associated with smoking are reduced or eventually eliminated when smoking abstinence is maintained. For instance, the risk of coronary heart disease is halved one year after cessation, and 15 years after, it becomes similar to that of those who never smoked; lung cancer risk is reduced by 30 per cent to 50 per cent ten years after stopping smoking (Griffiths and Grieves, 2002).

Smoking cessation treatments represent some of the most cost effective of all healthcare interventions (USDHHS, 1990). For instance, for persons aged 20 who are at low risk, the gain in life expectancy when they quit smoking is three times higher than the gain after controlling high blood pressure, and ten times higher than the gain after controlling cholesterol levels (Taylor *et al.*, 1987). Although smoking cessation is most beneficial if undertaken when young, even quitting in middle age avoids much of the excess healthcare risk associated with smoking. Since smoking duration is the principal risk factor for smoking-related morbidity, the treatment goal should be early cessation and prevention of relapse.

Interventions at a population level might not be as successful as individual interventions. However, if they impact a large number of smokers, they will have important effects on disease rates. Later in this chapter it will be shown that initiatives such as non-smoking policies can help to improve smoking cessation rates and therefore contribute to preventing tobacco-related deaths.

2.3. ENVIRONMENTAL TOBACCO SMOKE

2.3.1. Definition

Tobacco not only harms those who smoke, but also those who are nearby and breathe in the smoke. ETS is a term now widely used to refer to the mixture of sidestream smoke (SS) and exhaled mainstream smoke (MS) that pollutes the air in locations where smoking is taking place (Samet, 1999). MS is the smoke drawn through the tobacco into the smoker's mouth. SS is the smoke emitted by the burning tobacco between puffs.

In 1992, the US Environmental Protection Agency (2003) identified ETS as a Class A carcinogen; this puts tobacco smoke in the same category as asbestos and arsenic. Recently, the IARC (2000) declared tobacco smoking and tobacco smoke to be carcinogenic to humans (Group 1). ETS contains thousands of toxic chemicals, including benzene, cyanide, cadmium, lead, radioactive polonium, benzo(a)pyrene diol epoxide (BPDE), ammonia, carbon monoxide and nicotine. The inhalation of ETS by non-smokers has also been called "involuntary smoking" and "passive smoking." Both terms will be used interchangeably in this thesis.

2.3.2. Health consequences of exposure to ETS

There has been much controversy about the damaging effects of passive smoking on health. Studies have produced contradictory findings. In 1998, Barnes and Bero (1998) tried to clarify why review articles on the health effects of passive smoking reached different conclusions. From the 106 reviews identified by Barnes and Bero, evidence from 39 papers (37 per cent) claimed that passive smoking was not harmful to health. However, it was noted that 74 per cent (29/39) of these were written by authors with tobacco industry affiliations. The study showed, through multiple logistic regression analysis, that the only factor that predicted the review article's conclusion was whether or not its author was affiliated with the tobacco industry *(ibid.)*. These findings suggest that the tobacco industry is trying to jeopardise the

evidence on passive smoking by publishing review articles supporting its position that passive smoking is not harmful to health.

A report from the US Surgeon General estimated that the tobacco industry dedicates more than $5 billion (£3[4]) budget to advertising and promotion aimed at sustaining or increasing tobacco use (USDHHS, 2000). Part of this budget is used to establish controversy. One example is the advertisement campaign in newspapers in a number of European countries launched by Philip Morris in June 1996, entitled "Second-hand tobacco smoke in perspective" (www.asa.org.uk). The advertisements compared the risk of contracting lung cancer from passive smoking with other risks to health from everyday activities, including eating biscuits and drinking ordinary chlorinated water. The advertisers were forced to withdraw the advertisement because of the misleading information. They were comparing relative risks from single studies that had not been verified. The aim of this type of campaign is to undermine public health messages about the health risks of passive smoking.

The industry knows the real effects of passive smoking, and worries about it (Smith and Phillips, 1996). In 1978, a secret study conducted for the US Tobacco Institute stated that passive smoking was the most dangerous development to the long term viability of the tobacco industry that had yet occurred. The antidote to the passive smoking issue suggested by the study was to "develop and widely publicise clear-cut, credible medical evidence that passive smoking is not harmful to the non-smoker's health" (Roper Organization, 1978, p.17).

The *British Medical Journal* recently published an article on passive smoking. That article, by Enstrom and Kabat (2003), suggested that exposure to ETS is not associated with an increased health risk from heart disease, lung cancer or chronic obstructive lung disease.

[4] Exchange rate 01/01/2000. Source: International Currency Converter. Available at: http://www.iccfx.com

There has been a huge response from editors, scientific associations, and private individuals asking for a public retraction[5]. The paper has been criticised for being seriously flawed. According to the American Cancer Society, who originally started the cohort, the information collected on ETS exposure is insufficient to distinguish persons who were exposed from those who were not (Thun, 2003). Ignoring this misclassification bias can lead to the underestimation of the strength of the association between ETS and disease (Last, 1995). Besides, the authors had applied for and received funding from Phillip Morris in 1998, which raises a conflict of interest. It is very unfortunate that the study by Enstrom and Kabat (2003) has already been and will be widely cited by the tobacco industry to delay restrictions on public smoking.

Despite the counter-arguments produced by the tobacco industry about the harmful effects of passive smoking, authoritative investigations and reviews over the past two decades have concluded that there is substantial scientific evidence to link ETS exposure with a number of adverse health effects (USDHHS, 1986; US Environmental Protection Agency, 1992; Department of Health, 1998b; IARC, 2002).

Listed in Table 2.1 are the developmental, respiratory, carcinogenic, and cardiovascular effects both causally associated with or having suggestive evidence of causal association with ETS exposure. Only those relative risks presented in the last Report of the California Environmental Protection Agency (1999) are shown in the following table.

Some relative risk estimates associated with ETS exposure are small, but because virtually everyone is to some extent exposed to tobacco smoke the overall impact can be quite large. A more detailed explanation of the health risks associated with ETS is presented below.

[5] See bmj.com Rapid Responses for Enstrom and Kabat, 326 (7398) 1057-67 at: http://bmj.com/cgi/eletters/326/7398/1057#32294

Table 2.1 Health effects associated with exposure to ETS

Effects causally associated with ETS exposure		Effects with suggestive evidence of a causal association with ETS exposure
Developmental effects	RR	Developmental effects
Low birth-weight	1.2-1.4	Spontaneous abortion
Sudden Infant Death Syndrome (SIDS)	≈ 3.5	Adverse impact on cognition and behaviour
Respiratory effects		Respiratory effects
Acute lower respiratory tract infections in children	≈1.5-2.0	Exacerbation of cystic fibrosis
Asthma induction and asthma exacerbation in children	≈1.6-2.0	Decreased pulmonary function
Chronic respiratory symptoms in children	≈1.7-2.3	
Eye and nasal irritation in adults	1.6	
Middle ear infections in children	≈1.62	
Carcinogenic effects		Carcinogenic effects
Lung cancer	≈1.2	Cervical cancer
Nasal sinus cancer	1.7-3.0	
Cardiovascular effects		
Heart disease mortality	1.3	
Acute and chronic coronary heart disease morbidity		

Source: California Environmental Protection Agency (1999). Health effects of exposure to ETS, Table ES.1.

2.3.2.1. Effects on foetal development

There is a strong association between maternal smoking and lower birth weight. The current estimates suggest that the risk of low birth weight is from 20 per cent to 40 per cent higher among infants of non-smoking mothers who have been exposed to ETS (Windham *et al.*, 1999, 2000). Low birth weight is associated with many well-recognised problems for infants, and is strongly associated with perinatal mortality (Andres and Day, 2000).

Numerous studies have demonstrated an increased risk of sudden infant death syndrome (SIDS) in infants whose mothers smoke (US Environmental Protection Agency, 1992; Schoendorf and Kiely, 1992). Recent epidemiological studies have suggested that postnatal ETS exposure might be an independent risk factor for SIDS (Golding, 1997; Dybing and Sanner, 1999). The hypotheses used to explain the biological relationship between passive smoking and SIDS is that ETS might impair respiratory control through carbon monoxide and nicotine exposure. Also, passive smoking can directly affect lung function and increase the likelihood of respiratory

tract infections in infants, which might result in a higher risk of sudden infant death syndrome (California Environmental Protection Agency, 1999).

2.3.2.2. Respiratory effects

Children are especially sensitive to the respiratory effects of ETS exposure. There is consistent and compelling evidence that in children passive smoking is related to asthma induction and exacerbation, increase in lower respiratory tract illness, and acute and chronic middle ear infection (USDHHS, 1986; US Environmental Protection Agency, 1992; Cook *et al.*, 1998; Strachan and Cook, 1998). There are several reasons why infants and children are more susceptible to harm from ETS. First, their respiratory tract is still developing; second, children are also prone to illness from ETS because they have a higher respiratory rate than adults and because some ETS-associated conditions, such as middle ear disease, occur primarily at young ages (Davis, 1998).

Several studies suggest cystic fibrosis can be exacerbated by ETS exposure; the extent and magnitude of such effects are still uncertain (California Environmental Protection Agency, 1999; Smyth *et al.*, 2001). Eye and nasal irritation are the most commonly found symptoms among non-smoking adults exposed to ETS.

2.3.2.3. Carcinogenic effects

The USDHHS (1986), the US Environmental Protection Agency (1992), IARC (2002), and the UK Scientific Committee on Tobacco and Health (SCTH) (Department of Health, 1998a) have all reviewed the scientific evidence regarding the effects of exposure to ETS, and have concluded that passive smoking increases the risk of lung cancer to the order of 20-30 per cent. Other published meta-analyses of lung cancer in never smokers exposed to second-hand tobacco smoke at the workplace have found a statistically significant increased risk of 16 per cent to 19 per cent (IARC, 2002).

The epidemiological evidence on lung cancer and passive smoking has been questioned in relation to the possibility of publication bias. Some authors have suggested the possibility that studies with small samples that reach "negative"

conclusions that passive smoking causes lung cancer, might not get published (Copas and Shi, 2000). However, other studies in the past have shown that there is no such publication bias (Bero *et al.*, 1994), and that if those unpublished studies existed, the tobacco industry would have to make sure that the public knew about them (Misakian and Bero, 1998).

Passive smoking increases the risk of lung cancer linearly in a dose-related fashion up to relative risks of three or greater (Hackshaw *et al.*, 1997). The epidemiological and biochemical evidence on exposure to ETS, with the supporting findings of tobacco specific carcinogens in the blood and urine of non-smokers exposed to ETS, provides compelling evidence that breathing other people's tobacco smoke is a cause of lung cancer (Johnson *et al.*, 2000). Researchers have found that, after a few hours of heavy exposure to sidestream smoke, non-smokers excrete nitrosamine metabolites (Hecht *et al.*, 1993, 2001).

Data for associations between involuntary smoking and other cancers are conflicting and scarce (IARC, 2002). A significant positive association has been found between exposure to ETS and nasal sinus cancer in non-smoking adults (Benniger, 1999). There is also epidemiological and biochemical evidence suggesting that exposure to ETS may increase the risk of cervical cancer. Findings of deoxyribonucleic acid (DNA) adducts in the cervical epithelium as well as nicotine in the cervical mucus of ETS-exposed non-smokers provides biological plausibility, although further research is needed to confirm this hypothesis (California Environmental Protection Agency, 1999).

2.3.2.4. Cardiovascular effects

Epidemiological data from numerous studies in diverse populations are supportive of a causal association between ETS exposure to spousal smoking and coronary heart disease mortality in non-smokers (He *et al.*, 1999). For non-smokers exposed to spousal ETS, compared to non-smokers not exposed, the risk of coronary heart disease mortality is increased by a factor of 1.3. Exposure to ETS can increase non-smokers' risk of having a stroke by up to 82 per cent (Bonita *et al.*, 1999). The

mechanisms by which ETS causes heart disease have been studied in different clinical investigations. Effects observed include impaired exercise performance, altered lipoprotein profiles, enhanced platelet aggregation, and increased endothelial cell counts (California Environmental Protection Agency, 1999). These findings might explain both the short and long term effects of ETS exposure on the cardiovascular system.

2.3.2.5. Other effects

Though active smoking has been associated with decreased fertility in men and women, the current available data on ETS exposure and fertility show mixed results (California Environmental Protection Agency, 1999). More studies are needed to draw conclusions regarding the effect of ETS on male and female fertility.

More clear is the association between ETS and caries among children. A recent study has found that children exposed to ETS had an increased risk of tooth decay (Aligne *et al.*, 2003). Reduction of passive smoking is therefore important not only for the prevention of respiratory and cardiovascular problems, but also for the promotion of children's dental health.

2.3.3. Public opinion on passive smoking

Nowadays most of the population, including smokers, are aware that smoking poses a serious health risk. However, public opinion on the risks of passive smoking is not so clear. As explained before, the tobacco industry has contributed to this confusion by trying to discredit the scientific evidence on the health consequences of passive smoking.

A European study carried out in 1992 explored 12,800 Europeans' attitudes towards passive smoking (Europe Against Cancer, 1993). Results of this study suggested that the concept of what is called passive smoking or involuntary smoking was fairly familiar to the public in different areas, but slightly more in the northern countries such as Denmark (97 per cent), and Germany (92 per cent), and less so in the southern countries such Portugal (54 per cent), and Spain (69 per cent). The survey

also asked about the health consequences of exposure to ETS. Around half of the participants (52 per cent) thought that passive smoking can in the long term cause serious illnesses such as cancer; this belief ranged from 64 per cent in the UK to 38 per cent in the Netherlands.

A more recent survey carried out in the UK suggests an increase in the knowledge about the effect of passive smoking (Lader and Meltzer, 2002). Ninety per cent of respondents thought that a child's risk of getting chest infections was increased by passive smoking, and over 80 per cent thought that passive smoking would increase a non-smoking adult's risk of lung cancer, bronchitis and asthma. People who had never smoked or who no longer smoked were more likely than smokers to be aware of the effects of passive smoking.

Surveys carried out in Spain however suggest lower awareness of the risk of passive smoking. For instance, the latest survey on Navarran youth attitudes, carried out in 1998, showed that 25.6 per cent of the respondents thought passive smoking was a nuisance, but probably not harmful to their health (Departamento de Salud Gobierno de Navarra, 2003). The reply was closely related to the smoking status of the respondent; smokers were more likely to think that passive smoking was harmless.

Public opinion on passive smoking is very important. Community attitudes towards passive smoking are a determinant factor in the success of non-smoking policies. Low awareness of the effects of ETS might make restrictions difficult to enforce. There is a strong need to make people aware of the dangers of passive smoking, especially smokers, who have been shown to have less knowledge.

2.4. FACILITATING HEALTH BEHAVIOUR CHANGE.

Earlier in this chapter it has been pointed out that smoking cessation is the principal way in which a smoker can reduce his or her future risk of disease. However, changing health behaviour is normally a difficult task. Individuals try to have a healthier diet, to do more exercise, to quit smoking, but many times they fail in their

attempts. For instance, it is estimated that although more than 70 per cent of smokers would like to quit, very few actually succeed (Department of Health, 1998b). The workplace is an important channel for smoking cessation interventions, especially if they are paired with a non-smoking policy. According to Abrams and colleagues (1994), smoking policies are necessary but not sufficient to enhance quitting. The purpose of this section is to present different theories as a basis for developing a workplace smoking cessation intervention.

Several models have been developed to describe the important variables that determine health behaviour and how they interrelate. The following section is a review of the most widely used models for the prediction of health behaviour: classic learning theories, the health belief model, the health locus of control, the theory of reasoned action, social cognitive theory, and the transtheoretical model.

2.4.1. Classic learning theories

The early models, in contrast to present theories, assumed that behaviour was governed solely by environmental factors, not by internal, cognitive processes. The first theories on behaviour were developed by Ivan Pavlov, a Russian physiologist, in the 1900s. While studying the physiology of digestion, Pavlov observed the production of saliva by dogs as they were fed, and also when the person who fed them appeared, without food. Then he paired a bell tone with feeding his dogs. Soon the dogs salivated to the tone, as they did in response to the food. They had learned a new connection: bell tone with food, or tone with saliva response. Pavlov (1927) concluded that both the *unconditioned* (e.g. food) and the *conditioned* stimulus (e.g. bell tone) elicit similar responses (e.g. salivation). He believed that conditioning took place at a visceral level and was the same in all species.

Classical conditioning can be applied to smoking behaviour. Tobacco consumption produces physiological reactions in the smoker and it is used repeatedly in the same context. As a result of this repeated pairing of substance effects and particular contexts, the contexts themselves elicit the substance effects on absence of the substance administration (Shadel *et al.*, 2002).

Classical conditioning explains why withdrawal symptoms are sometimes linked to substance related cues. For some smokers, the sound of the cigarette pack being opened, a striking match, or the smell of coffee are *conditioned* stimuli that increase the desire to smoke. For others, smoking is associated with socialising and being accepted in the group; in those cases, a party or seeing a friend smoking are the cues that elicit the impulse to smoke. Classical conditioning is a major factor in real life. Its primary use in human behaviour is in dealing with habit formation, either trying to form good habits, such as enjoying exercise, or to break bad ones, such as smoking. However, some critics argue that the model fails to explain how we learn behaviour (Bennet and Murphy, 1997).

Operant Conditioning (Skinner, 1953) added some explanation to the process of learning behaviours. This theory states that if a behaviour is rewarded or reinforced, it will continue or increase in frequency. Conversely, behaviours that are punished will reduce in frequency, or cease. In most cases, behaviour is the result of a balance between positive and negative reinforcement. It has been claimed that those reinforcement processes play a very important role in health related behaviours (Bennet and Murphy, 1997). For instance, young smokers might feel reinforcement by their peers when they start smoking. They feel part of the group; they want people to think they are "cool". Once they become addicted, the reinforcement continues through the changes of mood and attention within seconds of inhalation. On the other hand, they suffer negative reinforcement when they try to quit because of the withdrawal symptoms (headache, depression, anxiety) which disappear once they smoke again. This theory has been used in the field of smoking cessation. For instance, aversion therapy or "rapid smoking" pairs the pleasurable stimulus of smoking with some unpleasant stimulus, and thereby suppresses cravings (Hajek and Stead, 2000).

Both classical and operational conditioning theories provide very useful explanations for most human behaviours. Nevertheless, they have been criticised for being too radical, as they claim that behaviour is conditioned by the environment and it is not mediated by cognitive processes (Shadel *et al.*,2000). As will be argued later, there are

other important factors that determine behaviour which are grossly neglected by these theories.

More recent theories, such as social learning theory, explain that while much of our human behaviour could be attributed to experiences of reward and punishment, this relationship is mediated by cognitive processes.

2.4.2. Health belief model

The health belief model is one of the oldest social cognition models in health psychology (Hochbaum, 1953; Rosentock, 1974). Initially, this model focused on two aspects of health behaviour: *threat perception* and *behavioural evaluation.* Threat perception was seen to be influenced by two beliefs, the perceived susceptibility of the illness, and the severity of the consequences of such illness. Behavioural evaluation involved the consideration of the costs and benefits of engaging in the behaviour. In addition, the model proposed a third variable, *cues to action*, proposing that health-related decisions are triggered by environmental cues when appropriate beliefs are held. Later versions of the model (Becker *et al.*, 1977) incorporated the variable *health motivation,* or readiness to be concerned about health matters.

Applying the main constructs of the health belief model to smoking behaviour, a smoker would quit or continue smoking according to his/her perceived susceptibility, e.g. "my chances of getting cancer are great"; perceived severity, e.g. "if I had lung cancer my life would change dramatically"; and the balance between benefits, e.g. "quitting smoking would prevent future health problems" and barriers, e.g. "quitting smoking will be very difficult, I won't be able to cope with the withdrawal symptoms."

Although this model provided a useful framework on which future models were based, it has been criticised for not offering a clear operationalization (Sheeran and Abraham, 1995). It is a static model, and does not include variables that have been found to be highly predictive of behaviour in other models, such as intentions to perform behaviour, social pressure, or self-efficacy.

2.4.3. Health locus of control

The health locus of control theory has also been widely applied in health psychology. Developed from social learning theory (Rotter, 1954), this model focuses on perceptions of control over health. It makes the distinction between internal and external locus of control of orientations. *Internals* believe that events are a consequence of their actions and therefore they have control over them. In contrast, *externals* believe their actions are determined by events outside their control. The model suggests that those who regard their health as largely under their control are more likely to engage in health-maintaining behaviours (Rotter, 1966).

The role of control beliefs in predicting smoking cessation has been examined in a number of studies (e.g. Segall and Wynd, 1990). There is some evidence supporting the assertion that those who perceive that they have control over their health (*internals*) are more likely to initiate and maintain changes in their smoking behaviour. However, results suggest that while internal health locus of control beliefs may have some role to play in encouraging smoking behaviour change, their role is a weak one. Norman and Bennet (1995) suggest that the theory might be too narrow to explain health behaviour adequately.

2.4.4. Theory of planned behaviour

The theory of planned behaviour (Ajzen, 1988) is an extension of the earlier theory of reasoned action (Fishbein and Ajzen, 1975). It explains how influences over an individual determine the decision to follow a particular behaviour. According to this theory, behaviour is determined by *intentions*. At the same time, intentions derive from two cognitive processes: *individual attitudes* and *social norms*. One of the criticisms of the model was that it assumed that the individual had the resources, skills or opportunities to engage in the desired action. Ajzen (1991) addressed this weakness by adding a third dimension to the model, the *perceived control*. This concept reflects the perceived ability of the individual to engage in the desired behaviour.

Applied to smoking cessation, the theory of planned behaviour implies that individuals are likely to stop the habit if they believe it will lead to outcomes which they value (individual attitudes), if they believe that people whose views they value think they should quit (social norms), and if they feel they have the necessary resources, such as smoking cessation clinics, and opportunities, such as a non-smoking environment at work, to perform the behaviour (perceived control).

This theory has been successfully tested with a variety of behaviours, most of which were in the social field, such as cheating or shop-lifting, but also in the health field, such as smoking, alcohol consumption or sexual behaviour (Ajzen, 1991). A number of studies have employed the theory of planned behaviour to investigate smoking initiation and cessation. The theory has been found successful to predict current smoking (Godin *et al.*, 1992). Critics of the model argue that it deals with perception of control rather than with actual control, and that it does not include the notion of risk. It also has been criticised for being too elaborate (Conner and Sparks, 1995).

2.4.5. Social cognitive theory

Social cognitive theory, also called social learning theory, states that behaviour is the outcome of an interaction between cognitive processes and environmental effects. Developed by Bandura (1986, 1997), this theory has two main components: expectancies and vicarious learning.

According to this theory, human motivation and action are extensively regulated by forethought. This anticipating control mechanism mainly involves two kinds of expectancies: *action-outcome* expectancies and *self-efficacy* expectancies. To continue with the example of smoking behaviour, a smoker will quit if he or she believes that the outcome will be beneficial (e.g. reduced risk of cancer, better quality of life), and if he or she believes he or she will be able to do it. Previous studies have shown that the stronger the participants' belief in their ability to quit, the less they smoked (Gooding and Glasgow 1985 as quoted by Bennet and Murphy 1997).

The second construct of the social cognitive theory is the effect of modelling. Much human behaviour is a consequence of the behavioural models we have been exposed to. This is what Bandura (1997) calls *vicarious learning*. Human beings learn behavioural outcomes and establish efficacy expectancies from observing other people, without necessarily having a direct experience themselves. The experience of a first time smoker is not a pleasant one. According to operant conditioning theory, the bad taste and sickness of the first experience should produce a negative reinforcement that would lead to an immediate cessation of such behaviour. Yet this is not the case for many young people. The process of vicarious leaning offers an explanation for this. Even though they feel disgusted by their first experiences, at the same time they observe in others that smoking can be a pleasurable and rewarding behaviour. Therefore they continue their behaviour in expectation of enjoyment.

According to this theory, health policies and health promotion strategies should focus, not only on increasing action-outcome expectancies (e.g. giving more information about the benefits of quitting smoking and having a smoke-free environment), but also on changing efficacy beliefs. Health promotion programmes should also take into account the process of role-modelling. High status individuals (i.e. successful students, lecturers, professors at the university) modelling a healthy behaviour can encourage others to copy their behaviour. This process can also be used to teach the skills necessary to achieve behavioural changes or to increase efficacy expectations by seeing others attempting and succeeding to change.

2.4.6. The transtheoretical model of behaviour change

The transtheoretical model of change was developed by Prochaska and colleagues (1983) in an attempt to understand and collate the existing perspectives on smoking behaviour change. The model has been used with a range of problem behaviours and a variety of subject samples, but the core constructs of the model were first developed within the area of smoking-cessation research.

The central constructs of the model are the stages of change and the processes of change (Prochaska *et al.*, 1983). The model also incorporates three other constructs:

decisional balance (Prochaska and Velicer 1997), and self-efficacy (Velicer *et al.*, 1990) as markers and mechanisms in the change process.

Since it was first introduced, the transtheoretical model has been modified several times. The latest version identifies five stages of change: precontemplation, contemplation, preparation, action, and maintenance of change (Prochaska *et al.*, 1997). Precontemplation is the stage in which individuals do not recognise the need for change, or that they even have a problem. They do not intend to take action in the foreseeable future, usually measured as six months *(ibid.)*.

Contemplation is defined as the period of time in which individuals are seriously thinking of the possibility of change but have not made a commitment to take action. They weigh the pros and cons of the problem. According to Prochaska *et.al.* (1992), this can produce profound ambivalence that can keep people stuck in this stage for long periods of time. Individuals are classified as contemplators if they are seriously considering changing the problem within the next six months.

The preparation stage describes individuals who are seriously thinking about changing, usually measured as the next month. They have typically taken some significant action, for example tried to quit smoking for a least one day, within the past year (Prochaska and Velicer, 1997).

Prochaska *et al.* (1992) classified individuals as being in action stage when they change or modify behaviour to overcome problems. For the purpose of categorisation this stage is the period ranging from zero to six months after smokers had made the overt change. The maintenance stage begins after six months of continuous successful behaviour change.

The model also identifies experiential and behavioural processes that are most effective in helping people move from one stage to the next (Prochaska *et al.*, 1983). Prochaska *et al.* (1988) reported that each stage of change tends to be characterised by the use of specific processes. Experiential strategies, such as reading information about the risks of smoking or about how to quit, are used most frequently by

individuals in the contemplation and preparation stages of change (Fava *et al.*, 1995). Behavioural processes, such as avoiding people or social situations that encourage them to smoke, are used most frequently by individuals in the action and maintenance stages (*ibid.*).

In the recent years a number of authors have challenged different aspects of the transtheoretical model and the research based on it (Pierce, 1998; Whitelaw, 2000; Sutton, 2001).

Pierce *et al.* (1998) noted that studies investigating the predicting power of the model had not controlled for other variables known to have an effect in smoking behaviour, such as nicotine dependence or a detailed quitting history. They criticised the fact that smokers with different probabilities of future success can be placed at the same stage. Instead they suggested using a continuum of eight levels rather than a set of stages that combines addiction level, quitting history and intention to quit.

According to Whitelaw *et al.* (2000) there is a disproportionate popularity of the model. They argue that better designed outcome studies are needed to establish the success of the model. Also they suggest that qualitative studies focusing on practitioners' utilisation of the stages of change would provide a more complete picture of its implementation in a range of settings.

In his review of the existing literature Sutton (2000) concluded that current evidence for the model applied to substance use is limited and inconsistent. He pointed out that the main variable of the stages of change, intention to quit, predicted a future quit attempt better than successful cessation.

Despite these criticisms, there seems to be little disagreement with describing quitting as a process or with the possible advantages of using stage-tailored interventions (Pierce *et al.*, 1998; Bandura, 1997). The debate seems to concentrate more on the validity of the classification system (Pierce *et al.*, 1998; Sutton, 2001).

More positive critics have highlighted the dynamic nature of the model (Cassidy, 1997). The model is cyclical and bi-directional; individuals involved in behavioural change may start at any stage of the process, and progress or move back to an earlier level at any time. Abrams *et al.* (1994) described the model as the most comprehensive theory available for smoking cessation interventions.

Spencer *et al.* (2002) in their review of 148 studies applying the transtheoretical model concluded that evidence for its validity, as it applies to tobacco use, is strong and growing. The review also found that interventions tailored to a smoker's stage were successful more often than non-tailored interventions in promoting forward stage movement.

2.4.7. Summary of models

While the models presented above represent different approaches to the study of health behaviour, there is a considerable overlap in the variables identified as important explanations of behavioural change. Cummings *et al.* (1980) noted that while differences appear, they may represent differences in labelling rather than differences in the underlying constructs.

Conner and Norman (1995) in a theoretical comparison of social cognition models identified five constructs. The considerable overlap of the variables these models take into account leads the authors to the conclusion that the key cognitions have been identified.

First, most models have recognised the notion of threat, seen as the perceived susceptibility and perceived severity. Most of the models measure how the individual perceives the behaviour is affecting his or her health to be important (i.e. whether smokers believe they might suffer from lung cancer), and how severe the consequences of the behaviour are (i.e. how lung cancer is going to affect them, whether they will die from it or not). Those who do not feel susceptible, or who do not perceive the consequences as serious, appear to be less likely to change their behaviour.

Second, a number of models have given considerable attention to the perceived consequences of performing health behaviour. Both the health belief model and the transtheoretical model measure the pros and cons of performing health behaviour and the consequences that changing the behaviour might have. According to these models, those who weigh the advantages of quitting smoking over the disadvantages are more likely to succeed in their efforts to quit.

Third, most of the models have focused on perceptions of control in performing behaviour. This has been addressed in terms of *locus control* or *self-efficacy*. It has been argued that whether individuals believe they have the necessary skills, support, and strength to quit smoking will determine their success in abandoning the habit.

Fourth, normative influences on behaviour are covered by some of the models. How the environment influences the decision to change behaviour is addressed differently. The health belief model calls it *cues to action* while in the theory of planned behaviour it is labelled *normative beliefs*. Both models have acknowledged the importance of perceived social consequences of behaviour. For instance, if by introducing a non-smoking policy, smoking becomes less socially acceptable, the individual might perceive a stronger need to change his or her smoking behaviour.

Finally, the fifth variable identified by most of the models is *intention* (also termed motivation). This is the main construct in the transtheoretical model and the theory of planned behaviour. They measure individuals' intention to engage in behaviour change. Individuals who are motivated to change their health behaviour have been found to be more likely to succeed. Some authors have seen motivation as a meditating variable between behaviour and the four constructs presented above (Conner and Sparks, 1995).

Table 2.2 represents a matrix with the five constructs identified by Conner and Norman (1995) together with an analysis of to what extend they are included in each model.

Table 2.2 Main constructs identified by social cognition models in the prediction of health behaviour

CONSTRUCTS	MODELS
1. Notion of threat	1) The health belief model refers to it as *threat perception.* It is considered to be influenced by two beliefs, the perceived susceptibility of the illness, and the severity of the consequences of such illness. 2) The social cognitive theory terms it *action-outcome expectancies.* According to this theory, risk perception partly regulates human motivation and action. 3) The transtheoretical model includes this notion in one of the processes of change called *dramatic relief.* The model postulates that smokers experience and express feelings about the problem behaviour and potential solutions when they are in later stages of change.
2. Perceived consequences	1) The health belief model calls it *behavioural evaluation* suggesting that changing behaviour involves the consideration of the costs and benefits of engaging in the behaviour. 2) The theory of planned behaviour does not explicitly include perceived consequences but postulates that beliefs about outcomes influence *individual attitudes* towards behaviour. 3) The transtheoretical model employs the *decisional balance* score and suggests that the balance between the pros and cons varies depending on which stage of change the individual is in.
3. Perceptions of control	1) The health locus of control makes the distinction between internal and external *locus of control* of orientations. The model suggests that those who regard their health as largely under their control are more likely to engage in health-maintaining behaviours. 2) The theory of planned behaviour refers to this construct as *perceived control.* The concept reflects the perceived ability of the individual to engage in the desired behaviour. 3) The social cognition model calls it *self-efficacy* and postulates that the stronger the smokers' belief in their ability to quit, the more likely to succeed. 4) The transtheoretical model employs an overall confidence score to assess an individual's perceptions of control called *situational temptation.* This tool assesses how tempted people are to engage in problem behaviour in a certain situation.
4. Normative influences	1) The health belief model calls this concept *cues to action*, proposing that health-related decisions are triggered by environmental cues when appropriate beliefs are held. 2) The theory of planned behaviour terms it *social norms.* The theory suggests smokers will be more likely to quit if they believe that people whose views they value think they should stop smoking. 3) The transtheoretical model measures normative influences in two of the processes of change: social liberation and environmental reevaluation. This experiential process attempt to measure the awareness and assessment of how the problem behaviour affects the physical and social environment.
5. Intention	1) Theory of planned behaviour: According to this theory, behaviour is determined by *intentions.* This theory postulates that individuals who are motivated to change their health behaviour are to be more likely to succeed. 2) The transtheoretical model: Intention to modify behaviour is the main construct in the transtheoretical model, measured by the stages of change.

Social cognition models provided a framework for the determinants of health behaviour change. However, critics allege that in some instances they only account for a small amount of the variance in health behaviour (Bennet and Murphy, 1997). Shadel *et al.*(2000) highlight that social cognition models do not specify which social factors are important for influencing cognition.

Additions of new variables to these models should be considered such as nicotine dependence, socio-economic and cultural factors. In addictive behaviours, such as smoking or alcoholism, the physical addiction plays an important role in hampering the process of change (Pierce *et al.*, 1998; Shadel *et al.*, 2000) The nicotine withdrawal syndrome is well defined and has been identified as a trigger to smoke and as a main factor contributing to relapse (Shadel *et al.*, 2000; USDHHS, 2000).

Other determinants of health behaviour, such as cultural or socio-economic processes, are considered by social cognition models in the form of normative influences but are not fully explored. Socio-economic status plays an important role in determining smoking behaviour. High smoking prevalence has been found in the most disadvantaged groups (Acheson, 1998). Pricing and taxes also influence tobacco consumption. For instance, several studies have demonstrated that the uptake of smoking by young people correlates to price (Department of Health 1998a).

Behaviour and health are further influenced by the cultural environment. According to Shadel *et al.* (2000) specific cultural contexts influence when and how is consumed. Smoking is deeply embedded in a cultural framework that associates the habit with positive attributes (Nichter, 1998). A clear example of this positive association is when smoking is used to facilitate social interaction. Acheson (1998) maintains that unhealthy behaviour is frequently maintained by cultural and social processes and attempts to influence health behaviour should not ignore such processes.

None of the theories presented in this chapter alone provides a full understanding of the processes of behaviour change (Conner and Norman, 1995; Bennet and Murphy, 1997). Together, however, they suggest key variables and processes that may interact to predict behaviour and can be used to plan interventions promoting smoking

cessation. In this project, the transtheoretical model of change was chosen as a framework theory because it merges several aspects of the different social cognition models and integrates these different constructs in a comprehensive framework. It is also an operational model with validated instruments that allow researchers to measure change. Another reason for choosing this model was that it has been extensively used in the field of health promotion especially in smoking addiction. This will allow the researcher to compare results from this study with others carried out in different settings.

The transtheoretical model can be used to develop interventions targeted not only at employees who are prepared to take action, but also at the majority of the population who are not yet intending to quit. However, as mentioned earlier some limitations should be noted. This model does not include variables known to have an effect in smoking behaviour, such as nicotine dependence or socio-economic characteristics.

2.5. NON-SMOKING POLICIES IN THE WORKPLACE

2.5.1. Concept and types of policies

Smoking bans and restrictions have been defined as private, non-government, and government policies, regulations, and laws that limit smoking in workplaces and public areas (Hopkins *et al.*, 2001).

Efforts to control workplace smoking usually take two approaches: to assist smoking employees, and sometimes their families, in modifying their smoking behaviour, and to protect the health of non-smoking employees by reducing or eliminating exposure to ETS (Glasgow *et al.*, 1997). Often, these two approaches are combined with the hope that one approach will reinforce the other. Glasgow *et al. (ibid.)* argue that a non-smoking environment may impact on social norms and lead to the perception that smoking is socially inappropriate At the same time, efforts to help smokers to quit might increase the acceptance of a restrictive smoking policy (Glasgow *et al.*, 1997; Eriksen and Gottlieb, 1998; Biener and Nyman, 1999).

The different types of current non-smoking policies have been categorised as follows: non-explicit policy, environmental alterations, restricting employee smoking, banning smoking everywhere, and preferential hiring of non-smokers.

The "individual solution" approach, without an explicit policy, is still the most prevalent way of dealing with smoking in the workplace in Spain (Serrano, 1993). Smokers and non-smokers work out their differences on their own, using so-called "common courtesy." However, this measure does not protect employees from passive smoking. Non-smokers tend to put up with smoking in order to avoid disputes, which leads to friction between smoking and non-smoking colleagues. Besides, when there is no explicit policy, there is the implicit message that ETS does not represent a health risk (USDHHS, 1989). It has been argued that health and safety is not a matter for democracy but should be determined by best practice (Action on Smoking and Health (ASH) 2001). In the same way that employees are not allowed to make decisions on handling dangerous substances, or other health and safety issues such as ergonomics, noise, or temperature, the decision on whether to permit smoking or not should not be left in their hands.

A policy using environmental alterations normally separates smokers and non-smokers into different areas of a room. Sometimes this measure includes the use of air filters and improved ventilation systems to remove ETS. However, because smoke easily diffuses beyond physical boundaries, this approach does not guarantee protection from ETS. Research suggest that even the most sophisticated ventilation systems may not be able to clean the air adequately (Siegel *et al.*, 1995).

The least restrictive policies permit smoking everywhere except in designated non-smoking areas, indicating that smoking is the company norm. This type of policy offers a place where non-smokers can rest or have breaks without being exposed to ETS. However, those areas might not be separated from smoking ones and may not eliminate ETS exposure (Siegel *et al.*, 1995; Brownson *et al.*, 2002). Additionally, because employees spend the majority of the time in their work area rather than in the non-smoking common areas, this option may not substantially reduce employees' risks.

The most restrictive policies specify that smoking is prohibited except in designated areas, establishing non-smoking as the workplace norm. This policy provides greater protection to non-smoking employees as long as the smoking areas do not contaminate the air of work areas. One of the disadvantages of this kind of policy is that it might affect smokers' productivity if they are permitted to take extra smoking breaks or if smoking areas are located too far from the offices (USDHHS, 1989).

Some workplaces have requested that their smoking employees work longer in return for smoking breaks. For instance, in January 1999, Thurrock Council banned smoking on its premises. Council employees wishing to take smoking breaks are required to work 39 and a half hours a week instead of the standard 37 hours [6]. An argument against this kind of policies is that non-smokers may also take informal breaks, for example for a coffee, and although they might not be as frequent as for smoking, it may seem unfair that the same rules do not apply (ASH, 2001).

Smoking bans prohibit smoking completely at the workplace. Most of the companies with this type of policy permit their employees to leave the workplace to smoke. It has been claimed that smoking bans provide the maximum protection for non-smokers at the cost of greater inconvenience for smokers (USDHHS, 1989). A particular consequence of this policy is the appearance of groups of smokers outside the premises. Some smoking groups have complained about this sort of policy, arguing that by being forced to stand outside, they are exposed to cold and rain that might affect their health (ASH, 2001), and in some companies cabins that protect from rain and wind are installed outside for the use of the smokers. The key aspect of this approach is that it forces employees to interrupt their work to smoke. This might deter them from taking frequent smoking breaks and encourage them to quit.

There are smoking bans that do not permit employees to leave the workplace to smoke. This option requires greater focus on the needs of the smokers, including support for smokers to quit the habit (USDHHS *et al.*, 1996; WHO, 2002b). The reasons for adopting this policy might be not only to protect the workforce from

[6] BBC online- 15 Jan1999 (http://news.bbc.co.uk/)

ETS and to encourage quitting among smokers, but also to reduce the cost caused by smoking breaks. This option poses potential problems with enforcement and loss of employees who smoke.

A few companies have explicit policies of hiring only non-smokers. They usually have a contractual requirement that employees should be non-smokers and that any new employee who is a smoker should give it up completely, within a fixed period of time. Hiring only non-smokers ensures a smoke-free work environment and makes it clear that non-smoking is the company norm. However this approach has several potential problems: it presents an intrusion of work into private life, especially if the policy is monitored and some smoking workers are forced to live a lie, with the possibility of losing their jobs if they fail to quit. Arguments in favour of such policies declare that the health of the employee is a legitimate concern and cost for the business, and that smoking facilities and breaks are also a cost if people continue to smoke during work time (ASH, 2001).

The transition into a smoke-free workplace is normally a gradual process. In most cases there is a first stage when smoking is banned from all common areas but smoking areas are provided, before moving into a complete ban.

2.5.2. Benefits of implementing a non-smoking policy

A mixture of health, social, economic, and legal arguments combine to make controlling smoking in the workplace a serious policy issue.

2.5.2.1. Health impact of non-smoking policies

As explained before, ETS is a known carcinogen and a recognised workplace hazard, and it is employers' duty to protect employees from it. A systematic review of published studies, conducted by the Task Force on Community Preventive Services and co-ordinated with a broad team of experts, including those from the Centers for Disease Control and Prevention (CDC) and the National Cancer Institute (NCI), found that smoking bans and restrictions are effective in reducing exposure to ETS

(Hopkins *et al.*, 2001). They found that workplaces with smoking bans tended to show greater reduction in ETS exposure than workplaces with smoking restrictions.

Smoke-free workplaces also provide an incentive for smoking employees to quit or cut down the number of cigarettes they smoke at work. In their last review on the impact of non-smoking policies in the workplace, the US Task Force on Community Preventive Services observed lower levels of cigarette consumption among workers exposed to smoking bans or restrictions (Hopkins *et al.*, 2001). Overall, the median absolute change was -1.2 cigarettes per day after follow up periods up to two years (Brownson *et al.*, 2002). The findings were less consistent as to whether smoking prevalence is reduced. Out of six qualifying studies (the US Task Force only includes experimental or quasi-experimental designs in its reviews), three studies (Biener *et al.*, 1989; Gottlieb *et al.*, 1990; Patten *et al.*, 1995) observed reductions in prevalence after implementation of smoking bans or restrictions (changes of -1.4 per cent, -3.4 per cent, -11.4 per cent). The three other studies (Mullooly *et al.*, 1990; Jeffery *et al.*, 1994; Etter *et al.*, 1999) observed small increases in smoking prevalence (changes of +0.4 per cent, +0.8 per cent, +0.3 per cent).

Fichtenberg and Glantz (2002) carried out a systematic review to evaluate the effects of smoke-free workplaces on smoking behaviour, but in this case, the review includes only complete smoking ban policies. They found that total bans were associated with a reduction in smoking prevalence of 3.8 per cent (95% CI 2.8-4.0), and a decrease of 3.1 per cent (95% CI 2.4 to 3.8) cigarettes per day per continuing smoker. According to this review, totally smoke-free workplaces seem to have about twice the effect on cigarette consumption and prevalence as those that allowed smoking in some areas.

Several reasons have been suggested to explain the lack of evidence found in some studies about policy effect on smoking cessation. Abrams *et al.* (1994) explain that follow-up periods have been too brief. Most of the studies evaluate the policy after six to 12 months, however the impact of the policy on cessation may occur only over the course of several years in a smoke-free worksite. Biener and Nyman (1999) suggested that the failure of many previous studies to detect a significant effect on smoking cessation of worksite smoking bans may be a consequence of inconsistent

enforcement of policies. If enforcement procedures are not set up, it is more likely that the norms will not be upheld and smoking cues will not be reduced.

Fichtenberg and Glantz (2002) carried out a systematic review to evaluate the effects of smoke-free workplaces on smoking behaviour but, in this case, the review includes only complete smoking ban policies. They found that total bans were associated with a reduction in smoking prevalence of 3.8 per cent (95% CI 2.8 -4.7), and a decrease of 3.1 (95% CI 2.4 to 3.8) cigarettes per day per continuing smoker. According to this review, totally smoke-free workplaces seem to have about twice the effect on cigarette consumption and prevalence as those that allowed smoking in some areas.

Research suggests that non-smoking policies might increase the number of attempts to quit which is also a step forward in the process of cessation (Burns *et al.*, 2000). Even the tobacco industry itself recognises that smoke-free environments help smokers to quit. As early as the 1980s, the tobacco industry recognised that smoke-free workplaces have a major effect on smoking consumption:

> The immediate implication [of smoking bans] for our business is clear: if our consumers have fewer opportunities to enjoy our products, they will use them less frequently and the result will be an adverse impact in our bottom line
>
> The voluntary restrictions of smoking - by business, associations, public agencies and even labour unions - is one of the most damaging and most insidious challenges that we face.
>
> Philip Morris as cited in (ASH, 2001, p. 9)

As mentioned earlier in this chapter, the tobacco industry has actively campaigned to confuse the public by saying that there is no risk from passive smoking. The main reason why the industry tries to distort the information is the fear that smoking restrictions will encourage smokers to quit.

2.5.2.2. Non-smoking policies' impact on social norms and attitudes

Another important advantage of non-smoking policies is their impact on social norms. If smoking becomes socially unacceptable, smokers are encouraged to quit and non-smokers discouraged from starting the habit (Glasgow *et al.*, 1997). Biener and Nyman surveyed workers by phone to examine the effect of being continuously employed at a smoke-free work site for three years, and found that half of those who were still smoking reported that smoking restrictions had increased their motivation to quit (Biener and Nyman, 1999). Although changes in policy might not translate directly into reduced prevalence, policy change does affect important social cognitive mediators of behavioural change, such as social norms.

A major shift in attitudes towards acceptability of non-smoking environments has taken place in the past decade. According to surveys carried out in different countries and settings, the majority of employees, non-smokers and, to a lesser extent, smokers are in favour of smoking restrictions (Becker *et al.*, 1989; Hocking *et al.*, 1991; Brenner *et al.*, 1997; Laforge *et al.*, 1998). While smokers are often inconvenienced by restrictions, they also recognise the overall benefits of the ban. Non-smoking policies, if carefully implemented, often result in increased levels of job satisfaction and improvements in working relationships (Griffiths and Grieves, 2002).

2.5.2.3. Economic impact of non-smoking policies

The Canadian Conference Board (1997) estimated the annual cost to a company at $2,565 (£1,423[7]) per smoking employee, due to increased absenteeism, decreased productivity, increased life insurance premiums, and smoking area costs. Clearly it costs more to employ smokers than non-smokers, and it costs more to allow smoking than to restrict it. Employees who smoke are more likely to be ill and require time off. As well as major diseases, such as cancer, bronchitis, emphysema, strokes, and heart disease, smokers are more susceptible to colds, flu, and eye

[7] Exchange rate 01/12/1995. Source: International Currency Converter. Available at: http://www.iccfx.com

irritation (Frankish *et al.*, 1997). Their smoking also affects non-smoking employees who, as explained earlier in this chapter, may also suffer more illness from the effects of passive smoking. A study of 300 employees in Glasgow found that non-smoking workers exposed to ETS suffer up to ten per cent reduced lung function (Chen *et al.*, 2001).

The effects of tobacco also include increased early retirement due to ill health. About half of the deaths caused by tobacco occur in middle age (35-64 years), before retirement (Griffiths and Grieves, 2002). The costs of smoking to companies also accrue from cleaning costs, fires, and damage to furniture and equipment (Frankish *et al.*, 1997).

2.5.2.4. Legal impact of non-smoking policies

Health and safety at work legislation requires that employers protect their staff from harmful substances in the workplace and take measures to secure the health, safety, and welfare of their employees. Medical evidence regarding ETS presented earlier in this chapter suggests that employers can no longer use the excuse of scientific uncertainty and should face their responsibility.

In the last few years there have been and are lawsuits against employers who do not protect workers from environmental ETS. For instance, in 1990 a civil servant in the UK legitimately claimed social security after maintaining that her bronchial asthma had been aggravated by tobacco smoke at her workplace (Bedau, 1998). In 2001, Marlene Sharp, a barmaid in Australia, become the first non-smoker in the world to win damages from her ex-employer for cancer caused by ETS. She sued the club where she worked for negligence[8].

In the UK, The Dorrington Case in 1997 highlighted the potential for success even without the requirement for the employee to prove that his or her health has been affected (Bedau, 1998). Jill Dorrington sued a law firm in London claiming that she

[8] BBC online- 2 May 2001 (http://news.bbc.co.uk/)

and other non-smoking employees had been forced to work in a smoky environment even after a non-smoking policy was implemented. She won the case before an industrial tribunal.

Smoking at the workplace clearly poses a legal threat for the employers. To date there is no legal precedent in Spain of employees whose health has been harmed by breathing ETS suing their employers[9]. However, companies that address the issue of passive smoking reduce the risk of such potential legal action.

2.5.3. Smoking-free universities

This project investigates the implementation of a non-smoking policy in the workplace, particularly in universities. It is therefore important to explore the implications and distinctiveness of working at an educational institution. Universities are large organisations in which people learn, work and socialise. They are major employers, employing a wide range of levels of professional, administrative, and manual staff in a wide variety of disciplines. Consequently, universities have an enormous potential to protect the health and promote the well-being of their members. University staff spends a significant part of their time at work, making their workplace an important channel for public health intervention.

Smoke-free universities improve the environment in which people work and study. Students develop independence and learn life skills at university, therefore it should be a setting that encourages healthy choices. Abercrombie *et al.* (1998) explain that among other virtues, universities promote reflexivity, the capacity to look at one's own practices and activities with a critical eye and consider changing them Universities can also contribute to the health of the wider community. They can set an example of good practice, banning smoking from their premises and using their influence and expertise to advocate healthy environments.

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[9] The database "Aranzadi" which contains Spanish legislation, jurisprudence, and legal commentaries was screened.

Despite the increasing number of smoke-free universities in countries such as the US, Canada or the UK, few reports have been published on the process and its effects. Only five studies that focused on implementing smoking policies in university settings have been found on the major databases.

The first of the five studies took place at Rutgers University, New Jersey (US) (Robinson, 1996). The study attempted to assess the impact of a non-smoking policy among staff and to recommend health education interventions based on stages of change theory and employee interest. Four months before the policy implementation, a survey was sent to a random sample of 1,000 university employees. The response rate was not very high (49.6 per cent) which might limit the representativeness of the results. Of the respondents, 73 per cent supported a university smoking ban. Interest in smoking cessation activity differed by stage of change. Based on the survey results, several health education programmes were suggested. The author of the study was contacted to find out whether these recommendations took place and whether the policy was successfully implemented. However she had not conducted and was not aware of any follow up studies.

The second study describes the evaluation of a non-smoking policy limiting smoking to separate areas in the Faculty of Education at the University of Cologne (Germany) (Apel *et al.*, 1997). The study was carried out one month after the implementation, and the sample was limited to university students. A total of 1240 students were questioned. Researchers interviewed every 10th student at the main exit of the university, in what they call random sampling; however, this method does not guarantee the representativeness of the sample. Results suggest that the new policy was supported by 91 per cent of the non-smoking students and by 68 per cent of the smokers. Approximately 30 per cent of the participants claimed that they were smoking less at the university after the change went into effect.

The third study used a quasi-experimental design to evaluate the impact of a smoke-free programme implemented in some buildings of the University of Geneva, Switzerland. The intervention consisted of media campaigns promoting a non-smoking policy with limited areas for smoking, and a smoking cessation counselling

service. Surveys were conducted before and after the implementation with a representative sample of university members. Results suggest that the policy was accepted by university members and reduced the irritation caused by ETS. However, results on whether the policy influenced smoking habits were inconclusive (Etter *et al.*, 1999).

The fourth study evaluates a smoking ban implemented at Edinburgh University in 1997 without prior consultation with staff or students (Parry and Platt, 2000). The authors used a combination of quantitative and qualitative research methods, including questionnaires to all employees, interviews with a purposive sample, and participant observation, to evaluate satisfaction as well as effectiveness of the policy. They argue that the policy did not impact all members of the university equally, and contributed to social inequalities among staff. For example, 16.0 per cent of academic staff claimed to have quit smoking compared to 4.2 per cent of manual staff. The paper draws primarily upon the qualitative data collected. Persistent smokers seemed to feel discriminated against and persecuted after implementation of the ban. The authors suggest that the smoking policies carry the risk of social exclusion and should be carefully planned and monitored. In their views, a smoking ban may fuel and widen social divisions between those who smoke and those who do not. However, in addressing the implications of the smoking ban at the university, the paper does not present the views of non-smokers or whether the new policy reduced their exposure to ETS. It concentrates on complaints made by smokers, especially highly dependent ones, whose work had been more affected by the complete smoking ban.

The most recent study of the five found evaluates a policy in the University of Ulster, Northern Ireland, four years after its implementation (Harvey *et al.*, 2002). The policy prohibited smoking in all internal areas except for a small number of designated smoking areas. The authors developed what they call a "rapid appraisal" method for the evaluation of the policy (Harvey *et al.*, 2001). Within three months, they carried out interviews with policy makers and consultation through questionnaires with a random sample of those affected by the policy. The response rate was 40 per cent for members of staff and 100 per cent for students. They found that non-smoking

employees were still exposed to ETS, and that compliance with regulations was low. The authors assert that the policy was not effective in motivating smokers to quit and had minimal effects on the reduction of cigarette consumption, although no data is presented in the paper to ascertain such claims. The main ideas explored in the paper are the ethical consequences raised with the implementation of the policy. Harvey *et al.(ibid.)* maintain that utilitarian principles, such as the belief that the outcome of the intervention should ensure the greatest good for the greatest number, raise ethical questions in regard to the needs of a small number of smokers. They argue that smoking bans limit smokers' autonomy and while they might be beneficial in terms of physical health, they might be harmful in terms of psychological well-being and the potential consequences if smokers contravene the policy.

The literature review presented in this chapter demonstrates the dearth of studies in the literature targeting non-smoking policies in a university setting. Previous research has used quantitative and qualitative research methods to evaluate an existing policy, but none of the studies found has used a combination of the two to plan a non-smoking policy implementation according to the needs of the university community. Furthermore, none of these studies has been carried out in countries in Southern and Eastern Europe, where smoking prevalence is higher and smoking is socially accepted.

There is a lack of knowledge about what the level of acceptance of non-smoking policies in Spain is and what type of policy would be more suitable in a university setting. As explained earlier in this chapter, current practice is that individuals work out their differences and decide whether smoking should be allowed or not. This option might force the non-smoker to cope with ETS in order to avoid confrontation. Also quite often, existing regulations in public places in Spain are not observed, leading to the underestimation of their significance. More research is needed to find out the reasons for this poor compliance and to suggest possible solutions to improve it.

2.6. SUMMARY

This chapter has shown that active and passive smoking pose a real threat to the health of individuals, and that this threat is preventable. Efforts to promote smoke-free environments in Spain are starting, but are not yet very common. Initiatives promoting smoke-free environments could effectively reduce the prevalence, disease impact, and economic costs of smoking. However the acceptability, process of implementation, and impact of such regulations in Southern European countries is not well documented.

Having reviewed the current state of research on workplace smoking restrictions, and evaluated the existing situation in Spain, it was proposed to investigate the implementation of a non-smoking policy in a university in Spain. The transtheoretical model of change was selected as the framework theory to plan a smoking cessation strategy according to the university community needs.

Chapter 3

Methods

3.1. INTRODUCTION

This project was intended to design and implement a non-smoking policy tailored to employees' needs at the University of Navarre. In order to achieve this objective, it was necessary to measure the situation in relation to smoking prevalence, smoking attitudes, and levels of exposure to ETS. Furthermore, it was important to anticipate the acceptability of smoking restrictions among university staff. Previous research suggests that a non-smoking policy should be accompanied by a suitable smoking cessation strategy (USDHHS *et al.*, 1996; WHO, 2002b). Employee needs and preferences for cessation methods were also investigated.

This chapter describes the research methods used and the rationale behind them. A combination of qualitative and quantitative approaches was used. Questionnaires were sent to a representative sample of employees in order to collect data on smoking prevalence, smoking cessation, exposure to ETS, and opinions about non-smoking policies. To contrast the data gathered, measurements of particulate matters and benzene were taken in several locations at the University. In addition, focus group discussions took place with a purposive sample of employees seeking positive ideas for implementing a successful policy, and reasons for their objection.

3.2. LITERATURE REVIEW SEARCH STRATEGY

This literature review was based on exhaustive searches of the relevant medical and social science literature. The following databases were searched:

- Medline (1966 - October 2002)
- Cumulative Index to Nursing Allied Health Literature (CINAHL) (1982 - January 2002)
- Institute of Scientific Information (ISI) citations database (1981-2002)
- The Cochrane Library Online (1999 - 2002)
- Aranzadi (1929- January 2003)

The following search strategy was used to identify relevant articles ((smoking OR tobacco) AND (university OR work OR workplace OR worksite) AND (environmental tobacco smoke OR second hand smoke OR passive smoking) in (All fields OR MeSH terms)).

3.3. SETTING

The study took place in the main campus of the University of Navarre, located in Pamplona (Northern Spain). In addition to this campus, the University has business schools in Madrid and Barcelona (IESE), and a secretarial college and an engineering school in San Sebastian. The university was founded in 1952. It is a private University and is a Corporate Work of the *Opus Dei*, a personal prelature of the Catholic Church.

The University of Navarre is considered one of Spain's leading centres of learning (Isardo, 2002). It offers 27 official degrees and over 300 postgraduate programmes. Around 25 per cent of its 12,025 students are training to become health professionals: 662 nurses, 1076 doctors, 371 pharmacists and 371 nutritionists registered for the academic year 2001-02. In the same year, 71 doctoral theses were defended in the faculties of science, medicine and pharmacy. The University of

Navarre has a University Hospital which employs around 1,700 professionals and provides treatment for over 100,000 patients every year. This health background makes it even more necessary to establish a social climate in which smoking is not thought to be the norm. As Gambescia (1993) argues, universities that give tacit approval of cigarette smoking on campus are incongruent with the health enhancing mission of their health departments and schools.

When this project was conceived in January 2000, smoking was permitted on all the premises apart from laboratories, lecture rooms, libraries, and lifts. The smoke in vestibules, corridors, cafeterias, and offices was affecting around 12,000 students and 1,900 employees.

3.4. DESIGN

This is a cross-sectional, descriptive study using different research methods to evaluate the current situation in relation to smoking at the University of Navarre. Based on the results of this descriptive study, tailor-made smoking cessation interventions and smoking restrictions will be implemented at the University.

Several authors have pointed out the benefits of triangulating quantitative and qualitative methodologies in health promotion research (Macdonald *et al.*, 1996; Britton *et al.*, 1998). Triangulation derives from navigation, where different bearings give the current position of an object (Silverman, 1993).

Triangulation can be simultaneous or sequential (Morse, 1991). In simultaneous triangulation qualitative and quantitative methods are used at the same time with limited interaction between the data sets during the data collection. While in sequential triangulation the results of one method are essential for planning the next method. In this study sequential triangulation was used. First the questionnaire was sent to a representative sample of employees. In a subsequent qualitative phase, a smaller sub-sample was selected on theoretical grounds and invited to focus group interviews. On the basis of the questionnaire and focus group results a sample of

university locations was selected in order to complement and validate the information on exposure to ETS. Results of the combined use of different research strategies can be mutually reinforcing providing a better understanding of the phenomenon than if just one method is used.

Research designs that combine different methodologies are not unproblematic as these methods belong to traditionally different paradigms with fundamentally different epistemological frameworks (Foss and Ellefsen, 2002). Barbour (1999a) maintains that multi-method research is unlikely to put equal emphasis on qualitative and quantitative methods but this does not necessary mean breaking with basic paradigmatic assumptions. The project presented in this thesis is deductive, driven by an a priory theoretical framework, and quantitative methods take precedence but are complemented by qualitative methods. However, especial care was taken so that each method meets the appropriate criteria for rigour (Morse, 1991). For instance, the analysis of the focus group was conducted inductively rather than forcing the data into some preconceived categories to fit the quantitative study or to prove a point.

According to Morse (1991), the real issue in triangulation is fitting the results of each methodology into a cohesive outcome. This is achieved by being aware of and adhering to the rules and assumptions inherent in each method and the contribution of the results to the overall research plan.

3.5. QUESTIONNAIRE

A structured self-administered questionnaire was sent to a stratified random sample of employees to assess smoking prevalence, exposure to ETS, and attitudes towards a future non-smoking policy. The strength of structured questionnaires lies in their ability to seek the views of a large sample in a cost effective way (Cartwright, 1983; Bowling, 1997). They offer the advantage of covering a large sample in a short period of time. Besides, the fact that the researcher is not present reduces the interview bias. On the other hand, postal questionnaires have some limitations. People of limited educational background may not be able to answer. Also, people may pass on the

questionnaire to others causing distortions in the sample. According to Oppenheim (1996) a major disadvantage of postal questionnaires is the poor response rates. Those who respond might be more interested in health matters, have healthier lifestyles or be more exposed to ETS.

In this case, a self administered postal questionnaire was considered an appropriate tool as 100 per cent of the sample was literate and the questions were straightforward and simple. An identification code was given to avoid sample distortions, and several measures that will be explained later in this chapter were taken to increase response rate.

3.5.1. Population and sample selection

Subjects in this study were employees from the University of Navarre. A representative group of employees was selected from the University address book, year 2000. An electronic copy of this document was obtained. It contained name, position and work contact details of 3361 members of the staff. The 1438 employees from the hospital were excluded from the sample size calculations, as they already have a non-smoking policy, giving an initial population of 1923 employees.

To estimate the sample size needed, three parameters were considered: an expected smoking prevalence of 32.5 per cent, based on the latest regional survey available at that time (Departamento de Salud Gobierno de Navarra, 1999), a precision of at least three per cent, and an α error of 0.05. According to these parameters, the minimum required sample size to estimate the smoking prevalence among university employees is 630. In the end 641 subjects were included in the sample.

A random sample stratified by position held was selected using STATA statistical software. The initial population of 1923 employees was divided into 17 groups (strata) and then subjects were randomly selected from within each group. The numbers selected from each strata ranged from three to 125 and were proportional to the size of the strata. This ensured that, as regards to position, the sample was representative of all University employees.

3.5.2. Variables and their operationalisation

The questionnaire consisted of three parts: one on demographic items, another concerning exposure to ETS, smoking status, and opinions about restriction policies, and a third, aimed only at smokers, concerning smoking habits and intention to quit.

A complete listing of variables measured is provided in table 3.1., which also indicates the specific information sought by each of the questions relating to the different variables. The complete questionnaire can be found in appendix 2.

Table 3.1. Overview of questionnaire variables and relevant questions

Questions 25-46 were only answered by current smokers.

SPECIFIC INFORMATION SOUGHT	QUESTION NO.	VARIABLE
Socio demographic	1	Age
	2	Sex
	3	Marital Status
	4	No. of persons in household
	5	No. of children
	6	Education level
	7	Employment status
	8	Faculty
Smoking status	9 and 10	Smoking status
ETS exposure	11	No. of smokers at home
	12	No. of hours exposed to ETS at home
	13	No. of persons sharing the office
	14	No. of smokers in the office
	15	No. of hours exposed to ETS at the office
	16	Perceived smokiness at the workplace
	17	Degree of annoyance by smoke at the university
Passive smoking risk beliefs	18	Agreement/disagreement ETS exposure is dangerous for health
Attitudes towards a future non-smoking policy at the university	19	Acceptance of higher restrictions
	20	Type of restrictions
	21	Opinions about future policy
	22	Perceived usefulness of offering help to quit smoking at the university
	23	Locations where smoking should be prohibited
Focus group invitation	24	Acceptance to take part in a focus group interview to discuss the future policy
Smoking habits	25	Type of tobacco (cigarettes, cigars or pipe) Age started to smoke
	26-31	*The Fagerström Test for Nicotine Dependence* Level of nicotine dependency
	32	No. of cigarettes smoked at work
	33	Locations at the university where participant normally smokes
Social acceptance of smoking at work	34	Perceived annoyance of non-smokers
	35	No. of colleagues that have encouraged him/her to quit
Intention to quit	36-39	Stage of change
	40	Contemplation Ladder Scale
	41	Attitudes towards smoking
	42	Processes of change
	43	Self-efficacy
	44	Decisional Balance
	45	Type of smoking help
	46	Confidence in quitting after the ban is implemented

The questionnaire included several validated tools to measure smoking status, nicotine dependence, and attitudes towards change. The following section presents those tools selected and explains the rationale for using them.

3.5.2.1. Smoking status

Current recommendations of the USDHHS (1986) and the WHO (1996) were used to assess smoking status. Figure 3.1 shows the algorithm used to define the participants' smoking status.

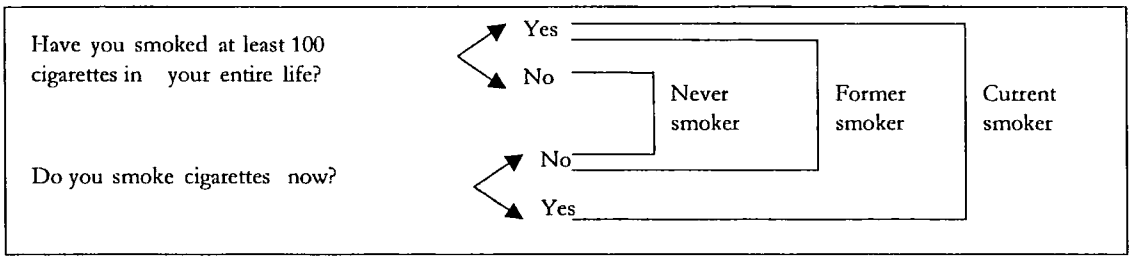


Figure 3.1. Algorithm used to define smoking status

3.5.2.2. The Fagerström Test for Nicotine Dependence

Nicotine, the addictive substance in tobacco products, is a very powerful drug. For some people, it can be as addictive as heroin or cocaine (USDHHS, 2000). This addiction might undermine efforts that smokers make to quit. Therefore it is important to measure smokers' levels of dependence when planning interventions to help in the processes of quitting. The questionnaire included a refined version of the Fagerström Tolerance Questionnaire (FTQ), called the Fagerström Test for Nicotine Dependence (FTND), a 6-item scale designed to measure physical dependence on nicotine (Heatherton *et al.*, 1991). This test has a maximum score of ten. Smokers that obtain scores <4 are classified as having "low dependence," 4-7 as "medium dependence," and >7 "high dependence" (Fagerström *et al.*, 1996). Table 3.2. shows items and scores of this test. The questionnaire included the Spanish translated version of the FTND that has been examined and validated by Becona and Vazquez (1998) with a sample of 646 representative Spanish smokers.

Table 3.2. Items and scoring for the Fagerström Test for Nicotine Dependence (FTND)

QUESTIONS	ANSWERS	POINTS
1. How soon after you wake up do you smoke your first cigarette?	Within 5 minutes	3
	6- 30 minutes	2
	31-60 minutes	1
	After 60 minutes	0
2. Do you find it difficult to refrain from smoking in places where it is forbidden (e.g., in church, in a library, or in a movie theatre)?	Yes	1
	No	0
3. Which cigarette would you most hate to give up?	The first one in the morning	1
	Any other cigarette	0
4. How many cigarettes do you smoke per day?	< 10	0
	11-20	1
	21-30	2
	>30	3
5. Do you smoke more frequently during the first hours after waking than during the rest of the day?	Yes	1
	No	0
6. Do you smoke even when you are so ill that you are in bed most of the day?	Yes	1
	No	0

3.5.2.3. Stages of Change

Traditionally, smoking cessation has been seen as a dichotomy considering only two categories: smokers or non-smokers. However smoking cessation is a process and not a simple dichotomy (Prochaska *et al.*, 1988). To understand and recognise that smokers are at different stages of change with respect to cessation is of vital importance if one is to plan cessation programmes.

As explained in the previous chapter, five stages of change have been conceptualised for a variety of problem behaviours (Prochaska *et al.*, 1992), figure 3.2. presents the algorithm used to identify the stage towards change:

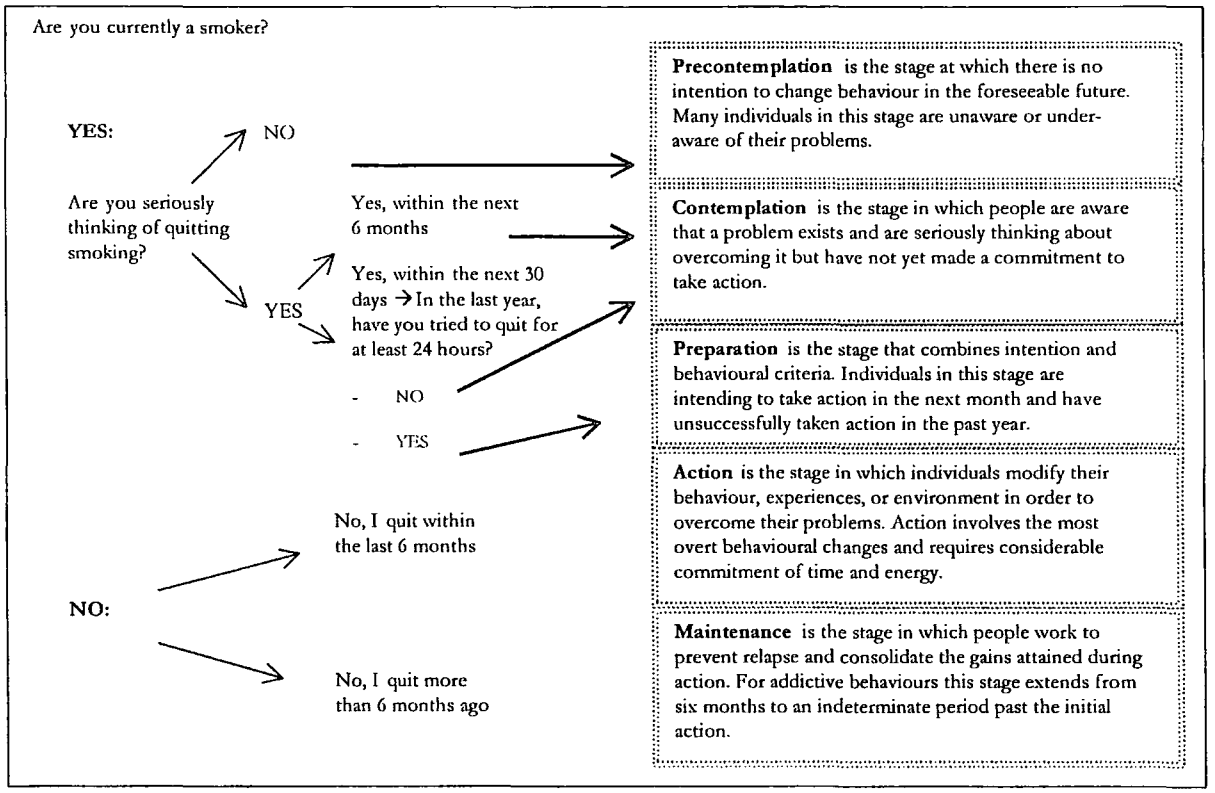


Figure 3.2. Stage of Change Algorithm

3.5.2.4. Processes of Change

Processes of change are a major dimension of the transtheoretical model that enables us to understand how shifts in behaviour occur. Change processes are covert and overt activities and experiences in which individuals engage when they attempt to modify problem behaviours (Prochaska *et al.*, 1983). Each process is a broad category encompassing multiple techniques, methods, and interventions traditionally associated with disparate theoretical orientations. The ten processes of change are consciousness raising, counterconditioning, dramatic relief, environmental reevaluation, helping relationships, reinforcement management, self-liberation, self-reevaluation, social liberation, and stimulus control *(ibid.)*. Table 3.3. presents the ten processes of change divided and classified into experimental and behavioural processes.

Table 3.3. Processes of change. Definition and interventions

Processes of Change	Definition / Interventions
Experimental Processes	
Consciousness Raising	Efforts by the individual to seek new information and to gain understanding and feed-back about the problem behaviour /observations, confrontations, interpretations, bibliotherapy.
Environmental Reevaluation	Consideration and assessment of how the problem behaviour affects the physical and social environment / empathy training, documentaries.
Self-Reevaluation	Emotional and cognitive reappraisal of values by the individual with respect to the problem behaviour / value clarification, imagery, corrective emotional experience.
Social Liberation	Awareness, availability, and acceptance by the individual of alternative, problem-free lifestyles in society / empowering, policy interventions.
Dramatic Relief	Experiencing and expressing feelings about the problem behaviour and potential solutions / psychodrama, grieving losses, role playing
Behavioural Processes	
Helping Relationships	Trusting, accepting, and utilising the support of caring others during attempts to change the problem behaviour.
Self-Liberation	Choice and commitment to change the problem behaviour, including belief in the ability to change/ decision-making therapy, New Year's resolutions, logotherapy techniques, commitment enhancing techniques.
Counterconditioning	Substitution of alternatives for the problem behaviour / relaxation, desensitisation, assertion, positive self-statements.
Reinforcement Management	Rewarding oneself or being rewarded by others for making changes / contingency contracts, overt and covert reinforcement, self-reward.
Stimulus Control	Control of situations and other causes which trigger the problem behaviour / adding stimuli that encourage alternative behaviours, restructuring the environment, avoiding high risk cues, fading techniques.

Prochaska *et al.* (1988) created a scale to measure processes of change among smokers. The short version of this scale was included in the questionnaire. Table 3.4. presents the 20 items used in this study to measure processes of change. There are two items for each of the ten processes. Behavioural processes are presented in the grey cells and experimental processes in the white ones. Each item is responded to on a five point Likert scale (from 5 = Repeatedly to 1= Never) according to the frequency with which one had experienced these events during the previous month.

Table 3.4. Processes of change. Items and scoring.

QUESTIONS	ANSWERS	SCORING
1. When I am tempted to smoke I think about something else.	5 to 1	Counterconditioning
2. I tell myself I can quit if I want to.	5 to 1	Self-Liberation
3. I notice that non -smokers are asserting their rights.	5 to 1	Social Liberation
4. I recall information people have given me on the benefits of quitting smoking.	5 to 1	Consciousness Raising
5. I can expect to be rewarded by others if I don't smoke.	5 to 1	Reinforcement Management
6. I stop to think that smoking is polluting the environment.	5 to 1	Environmental Reevaluation
7. Warnings about the health hazards of smoking move me emotionally.	5 to 1	Dramatic Relief
8. I get upset when I think about my smoking.	5 to 1	Self-Reevaluation
9. I remove things from my home or place of work that remind me of smoking.	5 to 1	Stimulus Control
10. I have someone who listens when I need to talk about my smoking.	5 to 1	Helping Relationships
11. I think about information from articles and ads about how to stop smoking.	5 to 1	Consciousness Raising
12. I consider the view that smoking can be harmful to the environment.	5 to 1	Environmental Reevaluation
13. I tell myself that if I try hard enough I can keep from smoking.	5 to 1	Self-Liberation
14. I find society changing in ways that makes it easier for non-smokers.	5 to 1	Social Liberation
15. My need for cigarettes makes me feel disappointed in myself.	5 to 1	Self-Reevaluation
16. I have someone I can count on when I'm having problems with smoking.	5 to 1	Helping Relationships
17. I do something else instead of smoking when I need to relax.	5 to 1	Counterconditioning
18. I react emotionally to warnings about smoking cigarettes.	5 to 1	Dramatic Relief
19. I keep things around my home or place of work that remind me not to smoke.	5 to 1	Stimulus Control
20. I am rewarded by others if I don't smoke.	5 to 1	Reinforcement Management

The validity of this scale for distinguishing successful and unsuccessful subjects for each of the processes has been demonstrated cross-sectionally (Prochaska and DiClemente, 1983) and longitudinally (Prochaska *et al.*, 1991).

3.5.2.5. Decisional Balance

Decision making is a critical process in modifying health-related behaviours like cigarette smoking. Janis and Mann (1977) proposed the Decisional Balance Sheet of

Incentives as a schema for representing both the cognitive and motivational aspects of human decision making. Velicer *et al.* (1985) operationalised and established the validity of the decisional "balance sheet" for one particular decision, that is, smoking behaviour. Two decisional balance measures, the pros and the cons, have become critical constructs in the transtheoretical model.

Prochaska and Vellicer (1997) suggested that the balance between the pros and cons varies depending on which stage of change the individual is in. Table 3.5. presents the items and scoring of the decisional balance tool used in this study. Subjects had to rate on a Likert Scale from 5 "extremely important" to 1 "not important", the six items of the scale.

Table 3.5. Decisional balance. Items and scoring.

QUESTIONS	ANSWERS	SCORING
1. Smoking cigarettes relieves tension.	5 to 1	PROS
2. I'm embarrassed to have to smoke.	5 to 1	CONS
3. Smoking helps me concentrate and do better work.	5 to 1	PROS
4. My cigarette smoking bothers other people.	5 to 1	CONS
5. I am relaxed and therefore more pleasant when smoking.	5 to 1	PROS
6. People think I'm foolish for ignoring the warnings about cigarette smoking.	5 to 1	CONS

Smokers can score a maximum of 15 and a minimum of 3 in both pros and cons of their habit. The intention is to determine if smokers at different stages of change at university value more the pros or the cons of smoking, and to use this information to elaborate health education messages adapted to each stage of change.

3.5.2.6. Self-efficacy / Situational Temptations

Self-efficacy (Bandura, 1997) conceptualizes a person's perceived ability to perform a task as a mediator of performance in future tasks. A change in the level of self-efficacy can predict a lasting change in behaviour if there are adequate incentives and skills. The transtheoretical model employs an overall confidence score to assess an

individual's self-efficacy (Velicer *et al.,* 1990). Situational temptations assess how tempted people are to engage in problem behaviour in a certain situation.

This tool presents nine situations that lead some people to smoke (Table 3.6.). Participants had to rate how tempted they might be to smoke in each situation using a 5 point Likert Scale from 5 = "Extremely tempted" to 1 = "Not at all tempted".

Table 3.6. Self-efficacy. Items and scoring.

QUESTIONS	ANSWERS	SCORING
1. With friends at a party.	5 to 1	Positive Affect / Social Situation
2. When I first get up in the morning.	5 to 1	Habitual / Craving Situation
3. When I am very anxious and stressed.	5 to 1	Negative Affect Situations
4. Over coffee while talking and relaxing.	5 to 1	Positive Affect / Social Situation
5. When I feel I need a lift.	5 to 1	Habitual / Craving Situation
6. When I am very angry about something or someone.	5 to 1	Negative Affect Situations
7. With my spouse or close friend who is smoking.	5 to 1	Positive Affect / Social Situation
8. When I realize I haven't smoked for a while.	5 to 1	Habitual / Craving Situation
9. When things are not going my way and I am frustrated.	5 to 1	Negative Affect Situations

Results from this scale can be used to identify what kind of situations lead smokers at university to smoke, and whether there are differences between stages of change. This information can be used when planning smoking cessation strategies and health education messages.

3.5.2.7. Contemplation Ladder Scale

Although the majority of smokers would like to quit, most of them are not ready to attempt to quit at any given time. Biener and Abrams (1991) developed the Contemplation Ladder, a tool designed to assess a smoker's position on a continuum, ranging from having no thoughts of quitting to being engaged in actions to change his or her smoker behaviour. This instrument is consistent with the transtheoretical

model of Change (Prochaska and Di Clemente, 1983). The difference is that instead of using a categorical classification, the ladder offers a continuous measure of readiness. This can be used as an outcome measure in the evaluation of a future non-smoking policy and smoking cessation programmes in the University of Navarre. Figure 3.3. shows the Ladder with its 11 point response continuum (Velicer *et al.*, 1985).

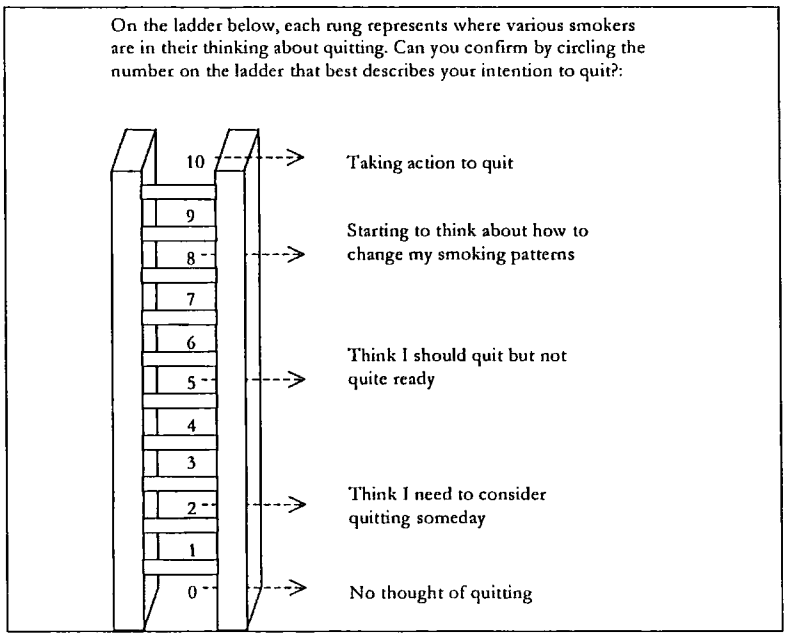


Figure 3.3. Contemplation ladder

The contemplation ladder scale has been shown to predict behaviours indicative of early stages of readiness, such as participation in activities that increase awareness of risk due to smoking (Abrams and Biener, 1992).

3.5.3. Back translation of the questionnaire

Some of the scales used in the questionnaire had never been used before with a Spanish sample, or at least no evidence could be found in the literature. The process of translating concepts developed in one culture for use in another often has semantic problems. To ensure the accuracy in the translation of validated scales, a back-translation procedure is recommended (Chang *et al.*, 1999). Back-translation is

the process of translating a document that has already been translated into a foreign language back to the original language - preferably by an independent translator- to check if its meaning has been preserved (Guillemin *et al.*, 1999).

The following scales were translated and back translated by a panel of bilingual experts: Process of Change, Decisional Balance (Velicer *et al.*, 1985; Bandura, 1997), Self-efficacy (Bandura, 1969, 1997) and Contemplation Ladder Scale (Biener and Abrams, 1991). The back-translation process had four stages. First, the original scales were translated into Spanish by two bilingual persons whose native language was Spanish. These translators were experts on the topic under study. In the second stage, the Spanish version was back-translated into English by a bilingual English lecturer whose primary language was English. This person did not know the original version of the scales. During the third stage, both original and back-translated version were reviewed, looking at the semantic equivalence of each back-translated item. Items were classified according to the following scale: (a) satisfactory agreement, (b) almost satisfactory agreement, but one or two words uncertain; or (c) doubtful translation. Finally, those items classified (b) or (c) were refined to generate a final Spanish version of the instrument. Out of 44 items back-translated, satisfactory agreement was reached for 73 per cent of them, almost satisfactory for 25 per cent and doubtful translation for two per cent.

Some ambiguous translations could be verified and clarified. For instance the sentence *"It bothers me to depend on cigarettes"* was back-translated to *"I dislike depending on tobacco."* The slight difference in the meaning of these sentences pointed out a mistake in the Spanish translation. Therefore the originally translated sentence: *"Me molesta depender del tabaco"* was corrected to: "*Me preocupa depender del tabaco.*" The complete process of translation can be consulted in appendix 3.

3.5.4. Pilot questionnaire

A pilot study was carried out using 50 employees randomly selected from the University address book. The purpose of this pilot exercise was to test the different

methods of administration (e-mail and internal mail) and to remove any ambiguities contained in the questions.

On the 16th of March 2001, 25 questionnaires were sent by e-mail and 25 by internal mail. The response rate by e-mail was slightly higher (76 per cent *vs.* 72 per cent), faster, and cheaper. Therefore, this method was selected as a first option in the main study.

Based on the answers to the pilot questionnaire the following changes were made:

Question 3: Marital status options were redefined. No one selected the option "religious" therefore it was removed. The option "widow" was added.

Question 5 was changed from an open question to a multiple choice option.

Question 8: Faculty. The number of options was increased and the possibility "other" was included.

Question 20: In the pilot questionnaire, the different types of future smoking restrictions were presented on a 5-point Likert-type scale from strongly agree to strongly disagree. Replies were contradictory as some respondents would strongly agree with all of them. The question was changed into a 5-option question, in which respondents had to select only the option they thought would be the most appropriate to implement in the University of Navarre.

Question 24 asked participants whether they would like to take part in a group interview to discuss the future policy. Only 25 per cent of respondents of the pilot questionnaire accepted. It was thought that the term "group interview" might sound unfamiliar and this could explain the low interest in this activity. The question was reworded into "Would you accept an invitation to share your opinion about these matters together with other employees in an informal meeting?" As explained later, this improved the acceptance and in the main study 44 per cent of the respondents were willing to participate.

Question 45 listed the different smoking cessation activities that the University was planning to provide. The option "none of them" was added to differentiate missing answers from those who were not interested in participating in any activity.

The new version was piloted with another five persons. No further changes were made. Because of the small scale and the exploratory nature of the pilot survey, it has been considered inappropriate to summarise its findings. The results obtained were used to improve the questionnaire and familiarise the researcher with the analysis techniques.

3.5.5. Data collection

Because most of the employees at the university have a University e-mail account and the pilot study had shown it to be an effective way of collecting data, electronic mail was chosen as a first option method for data collection. Those employees who did not have an e-mail address received the printed questionnaire via internal mail.

The electronic version of the questionnaire was published on the Healthy University Project webpage[1]. The web had three different sections: the introductory one, where the aim of the Healthy University Project was explained; the team page, where information and addresses of the people involved in the project were presented; and a third one, the questionnaire section. In the questionnaire section, participants could either submit their reply by e-mail by clicking on the page, or download a printable version of the questionnaire and submit it via the University's free internal mail.

A personalised message was sent to each participant, inviting them to visit the Healthy University Project's web page and answer the questionnaire. The message provided them with a personal code to enter in the questionnaire. This helped the researcher to differentiate between those employees who found the webpage and filled in the questionnaire and those who had been randomly selected to take part in the study.

[1] http://www.unav.es/enfermeria/UniversidadSaludable/cuestionario/form.html

Twenty days later, a reminder and a written questionnaire were sent by internal mail to those who had not yet replied (see appendix 4 for correspondence).

3.5.6. Analysis

The questionnaire analysis was carried out using the Statistical Package for Social Science (SPSS) software. A programme was written to enter the e-mail replies into the database. The written replies were entered manually into the database.

Several steps were taken to control the quality of data entry and coding. Field definitions were put in the SPSS database to limit errors in data entry. Each variable was examined individually for the presence of outliers. These outliers were then checked against the returned questionnaires.

A descriptive analysis was carried out. All missing values were excluded from the analysis. Frequencies were calculated for categorical variables and mean and standard deviation (SD) for quantitative variables. Chi-square test or Fisher's exact test were used in analyses that entailed comparisons of proportions. Differences on Likert scales scores between smokers and non-smokers were compared using the Mann-Whitney U test. Means were compared using Student's t test. One-way analysis of variance (ANOVA) was used to compare means among several groups. Once existing means differences were determined, post hoc Tukey's honestly significant difference test (Tukey's HSD) was carried out to establish pairwise multiple comparisons and determine which groups differ from each other.

The strength of the linear relationship between two variables was measured using Pearson's correlation coefficient for nominal variables and Kendall's correlation coefficient for ordinal or ranked variables.

3.6. FOCUS GROUP INTERVIEWS

Very few studies have used a qualitative approach to explore employees attitudes towards a non-smoking policy in the workplace. Focus groups are a form of group

interview used widely in social science research. It is a popular method in marketing research and media studies, and it has also been applied in a number of areas of healthcare studies, especially in health promotion and consumer satisfaction. This methodology capitalises on communication between research participants in order to generate data (Kitzinger, 1995). It can be used to examine not only what people think, but how they think, and why they think that way (Kitzinger, 1999).

According to Barbour (1999b), focus groups are especially useful for studying the success or the failure of particular programmes, and to examine people's different perspectives as they operate within a social network. The hypothesis is that focus groups could illuminate objections and support for future policies that are elusive to survey techniques (Kitzinger, 1999).

The objectives of these focus groups were:

- To examine participants' perspectives about a future non-smoking policy at the University of Navarre
- To identify objections and support for a future non-smoking policy at the University of Navarre
- To understand participants' perceptions and attitudes towards active/passive smoking
- To enable participants to play an active part in the research and implementation processes

3.6.1. Sample selection

Participants for the group interviews were recruited from those who had responded to the questionnaire. By ticking one of the options, they had agreed to participate in an informal meeting to discuss the possibility of implementing a non-smoking policy at the University of Navarre.

Literature reviews suggest that people with very different views on the subject should not be put together in order to avoid confrontation (Barbour, 1999b). It has been claimed that greater homogeneity fosters increased freedom of expression (Balch,

1998). The idea was to group people with similar characteristics, interests and opinions. Three variables were considered in grouping participants:

1) Faculty/school. The Campus in Navarre can be divided in two different sites (see figure 3.4.). Site A includes all science faculties/schools e.g. medicine, nursing, pharmacy and biochemistry. In Site B there are the social faculties e.g. journalism, philosophy, literature, history, law and theology. Because of the geographical location and mainly because of the different disciplines involved, it was decided to hold separated focus group sessions on the two sites.

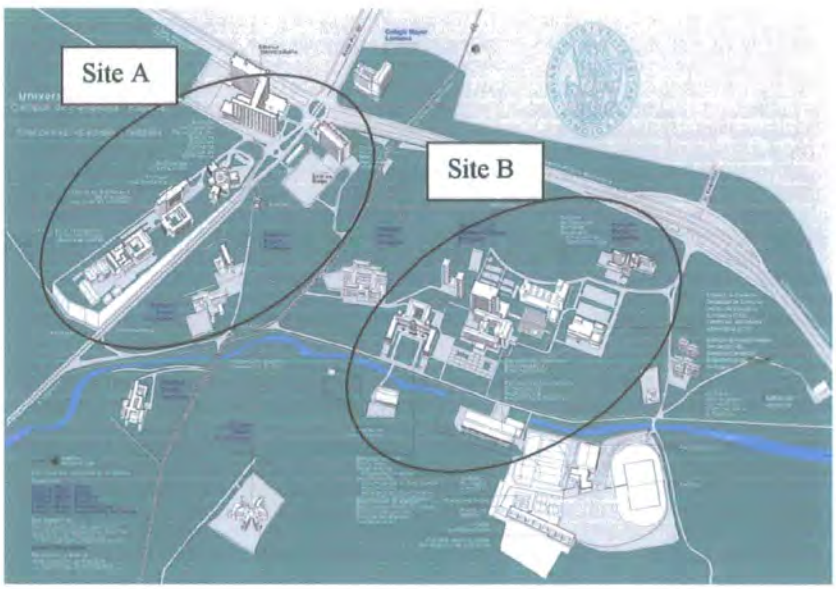


Figure 3.4. Map of the University Campus in Pamplona. Site A groups the science faculties and Site B the social science faculties.

2) Position held. Qualitative researchers highlight that hierarchy within the group might affect the data (Kitzinger, 1995; Jackson, 1998). Employees might feel uncomfortable talking in front of their superiors. In this study, employees were divided into two groups to avoid inhibition: academics and managing staff in one group, and teaching assistants and non-academic staff in the other.

3) Attitudes towards a non-smoking policy in the University of Navarre. Questionnaire results have shown that some smokers will support future policies and have views similar to those of non-smokers. Rather than combining

participants according to their smoking status, it was considered more appropriate to group them by acceptance/non acceptance of a future non-smoking policy at the University.

Because of time restrictions, only those who answered during the first month were invited to attend the focus group sessions. Out of 641 initially sent questionnaires, 386 answered within a month, from which 161 expressed their availability to attend a group interview. They were contacted by phone. The methodology was explained and consent was sought prior to scheduling the meeting.

3.6.2. Topics covered

A semi-structured guide was used to carry out the focus groups (see appendix 5). The topics included were: personal experience as smokers or non-smokers in the University; attitudes towards a future non-smoking policy; suggestions for the implementation and reinforcement processes. Participants were also encouraged to raise their own issues/worries.

3.6.3. Pilot interview

A pilot session was carried out with seven assistant lecturers from the nursing school in order to train the moderator and the observer in techniques and the use of the recorder. This session was also used to obtain perceptions on different posters and slogans planned for the presentation of the project to the University community on World No Tobacco Day.

The pilot exercise started with the question "what do you think about a future non-smoking policy in the University?". It took a while for the group to start talking. Therefore it was decided to change the order of the questions for the main study by first asking participants to introduce themselves and talk about their experiences as smokers or non-smokers at the University. This was later found to be a good ice-breaking exercise, putting them at ease and getting them talking.

3.6.4. Data collection

Every respondent who had agreed to attend the group interview was phoned in order to arrange a date for the meeting. Respondents seemed to be very interested in participating. However, it was difficult to put them together taking into consideration the intention to group people by campus, employment status, and agreement with a non-smoking policy, and trying to fit these requirements into their busy schedules. Finally, eight focus group sessions were organised. The final timetable for research was the following:

Table 3.7. Focus group distribution and timetable (22-28 May 2000)

	Monday	Tuesday	Wednesday	Thursday	Friday
9-10h Science Site		GROUP 2 10 teaching-assistants/ non-academic 2 smokers 7 in favour NSP 3 against NSP	GROUP 4 8 Academics 0 smokers All in favour NSP	GROUP 6 9 teaching-assistants/ non-academic 0 smokers All in favour NSP	GROUP 7 11 Academics: 6 smokers 2 against NSP 9 in favour NSP
16-17h Social Sciences Site	GROUP 1 8 Academics 3 smokers All in favour NSP*	GROUP 3 8 Academics 5 smokers All against NSP	GROUP 5 8 Academics 2 smokers All in favour NSP		GROUP 8 8 teaching-assistants/ non-academic 2 smokers All in favour NSP

* NSP= Non- Smoking Policy

The discussion was led by the main researcher, acting as a moderator. Literature recalls the importance that the moderator is seen to be impartial and objective (Krueger, 1988). There was also an assistant moderator as an observer, who registered non-verbal behaviour, atmosphere in the group and interaction between participants.

Sessions were carried out in a relaxed and neutral environment. The sessions lasted for about one hour. Coffee and biscuits were served at the beginning which helped to make the atmosphere more relaxed while introductions were made.

3.6.5. Analysis

The focus group interviews were fully transcribed. The transcription was done by a transcription service, and rechecked by the main researcher, who filled in gaps and missing words. The transcripts were supplemented by observational data obtained by the assistant moderator during the group interviews.

Quality of data analysis depends on repeated, systematic searching of the data (Strauss and Corbin, 1994). The moderator and the observer analysed the data separately. Both of them used the principles of constant comparison. Emerging themes and links were identified and coded. As literature suggests, the coding process was carried out by reading each of these documents and attributing a code to sentences, paragraphs or sections (Coffey and Atkinson, 1996). These codes represented a theme or idea with which each part of the data was associated. For example, the code "breaking the rules" was attributed to data that suggested experiences or perceptions of participants in situations when certain laws were violated. Sections of transcripts were given no code, one code or more than one code.

During data coding, notes were made about how decisions had been reached, how the coding process had been conducted, and any specific queries raised. Data analysis was inductive, as this part of the study sought understanding of perceptions about smoking and non- smoking policies, not to prove a preconceived theory. Codes were, therefore, generated from the data, rather than predetermined.

Having coded the first transcript, each subsequent reading of this and other transcripts was carried out with the full list of themes on the screen. New themes were added as necessary. In text analysis, Strauss and Corbin (1990) refer to the point at which no new themes are being identified as theoretical saturation. When and how theoretical saturation is reached, however, depends on the number of texts and their complexity, as well as on investigator experience, and the number of investigators examining the texts. In this study, emerging themes and categories were identified independently, and when different themes were given, agreement was reached by discussion between the two researchers.

QRS NUD*IST software for qualitative analysis was used to manage the created codes and group them. Once coding was completed, the codes that had common elements were merged to form categories. The definitions of categories were recorded in the same ways as the codes. Some codes were placed in more than one category.

It has been suggested that data should be analysed as promptly as possible after its collection so that qualitative elements of the encounter recorded in the data can be recalled as accurately as possible (Stewart *et al.*, 1990; Morgan, 1997). The process of data analysis was therefore commenced as soon as the first focus group was carried out.

All the analysis and coding of the focus group data was done with the original transcripts in Spanish to avoid the risk of losing information. Only the quotes presented in this thesis have been translated into English. Birbili (2000) argue that when translating participants' words researchers should decide is whether to go for 'literal' versus 'free' translation of their text.

A literal translation could perhaps be seen as doing more justice to what participants have said and 'make one's readers understand the foreign mentality better' (Honig, 1997, p.17). However, such practice can reduce the readability of the text. Free translation, on the other hand, always involves the risk of misrepresenting the meaning of the participants (Rubin and Rubin, 1995).

The quotes presented in this thesis have been literally translated. However to make participant's words accessibly and understandable, transcriptional suggestions and explanations are added in square brackets.

3.7. ENVIRONMENTAL TOBACCO SMOKE MEASUREMENTS

ETS measurements were taken to complement the questionnaire self-reported information on exposure to ETS and to obtain objective data of current contamination levels. This information can be used as a strong argument for policy implementation and can be re-tested in the future to evaluate the efficacy of smoking restrictions.

Different techniques can be used to obtain an accurate assessment of an individual's or a population's exposure to ETS. They are divided into direct and indirect methods. Direct methods make use of personal monitoring and biomarkers, whereas indirect methods model exposure through the use of air-sampling and space measurements (US Environmental Protection Agency, 1992).

Personal exposure to ETS is best assessed directly by the analysis of physiological fluids for tobacco smoke constituents or their metabolites, normally called biomarkers. Nicotinine and cotinine, a major metabolite of nicotine, are the most widely used biomarkers of ETS exposure (California Environmental Protection Agency, 1999). Those biomarkers are typically measured in blood, saliva and urine. However, the analysis of physiological fluids for large samples of individuals considerably increases the cost of the study.

In this project, personal exposure to ETS was evaluated using indirect methods. Questionnaires were collected in which subjects reported their own exposure history and smoking status. This information was then complemented with air-sampling measurements. The Chemistry and Edaphology department was contacted for advice and assistance to measure ETS contamination at the University. After reviewing the literature and bearing in mind the available resources, it was decided to measure particulate matter and benzene levels at different locations, selected on the basis of the questionnaire results.

3.7.1. Locations under study

Locations to measure contamination were selected on the basis of the questionnaire results. According to the questionnaire respondents, employees were more often bothered by ETS in cafes, vestibules/corridors, and break rooms of the University. In order to correlate these opinions with objective data, measurements were taken in the corridors and cafeterias of the main University buildings.

3.7.2. Particulate matters

The particulate matters are classified according to their aerodynamic diameter: less than 10 μm (PM10), less than 2.5 μm (PM2.5) and very fine particles less than 1 μm (PM1). The smaller the particles, the more dangerous they are, because of their increased capacity to infiltrate the lung cells.

Fixed-site air pollution monitors were used to capture the daily variations of indoor PM levels. The automatic monitor, type Grimm 1.107 (figure 3.5.) was used. This monitor measures in real time and simultaneously fractions PM_{10}, $PM_{2,5}$ y PM_1 of environmental particles. The Grimm monitor performs particulate size measurements by 90-degree laser light scattering. Air with multiple particle sizes passes through a flat laser beam produced by an ultra low maintenance laser diode. A 15-channel pulse height analyser for size classification detects the scattering signals. Due to the lack of a sample heater inlet, even aerosols and semi volatile liquid particles can be identified. These counts from each precisely sized pulse channel are converted to mass using a well-established equation, and the data is then formatted for standardised categories of PM10, PM2.5 and PM1. In order to obtain reliable results, the measurements took place during working hours, between 09.00-19.00h, in the cafeterias and corridors of the main University buildings on the campus.

Figure 3.5. Monitor Grimm-1770

In order to compare the present results with the limits established by the current legislation, estimations for average concentration of particulate matter for a 24h and three day period were calculated. One-way ANOVA test was used to determine mean differences in particle matter contamination between different University locations.

3.7.3. Benzene, toluene, xylenes, and etilbenzene (BTEX)

Another indicator of ETS contamination is benzene. It is a known carcinogen and a significant risk factor in leukaemia in particular (Agency for Toxic Substances and Disease Registry (ATSDR), 1997). Because of the serious known health risks of this hydrocarbon, measurements of average values were taken in different cafeterias and locations on the campus to estimate the population's exposure.

There are diverse methods to measure benzene concentration levels. In this project, passive dosimeters, "Radiello" type, were chosen (figure 3.6.). The efficacy of these has been proved by the European Reference Laboratory for Air Pollution (ERLAP). The Radiello Passive Sampling System consists of a small test tube (7cm long, 1cm in diameter), that contains an absorption material (graphitized coal) which is able to capture benzene, and also toluene, xylenes, and etilbenzene, by means of molecular

diffusion. Concentration measurements were taken during a random week in different locations at the university.

The main objective of these measurements was to estimate levels of benzene contamination at the University. However, because the method chosen measures simultaneously benzene, toluene, xylenes and etilbenzene (BTEX), and all of them are ETS constituents, the four components will be presented in chapter 5.

Figure 3.6. Radiello samplers installed in outdoor shelter

The analysis of benzene, toluene, xylenes and etilbenzene was done with gas chromatography. This technique involved the sample being vaporised and injected onto the head of a chromatographic column. The organic compounds, such as benzene, are separated due to differences in their partitioning behaviour between the mobile gas phase and the stationary phase in the column. Average concentrations are then calculated.

3.8. ETHICAL CONSIDERATIONS

The project obtained ethical approval from the University of Navarre's Ethical Committee (see appendix 5). Subjects in the study were informed that participation was voluntary, and that their individual responses would be kept confidential. They were encouraged to fill out the survey to determine their attitudes towards a future non-smoking policy.

Both the covering letter sent with the questionnaire and the web page emphasised that the responses would be confidential. Each subject in the database was represented by an identity code. Data was treated as strictly confidential, separating files with names from files with employee responses.

Prior to the focus group sessions, written consent to record and transcribe the interviews was obtained (see appendix 6). None of the participants refused to be taped. Files with names and tapes were destroyed after the analysis.

3.9. VALIDITY AND RELIABILITY ISSUES

As regards the validity of the results in this study, the main question is whether the data gathered by the researcher reflects reality. Special care was taken, and help was asked of additional researchers to test the content validation of the questionnaire created for this research. Most of the scales used in the questionnaire have already been tested in a multitude of settings and with different populations over a number of years which guaranteed their construct validity. Nevertheless, content validity was enhanced by giving the questionnaire to a panel of five judges with experience and knowledge of the topic, who made suggestions about the adequacy and relevance of the questions.

The use of the University address book as a sampling frame might have introduced some biases. Although every employee is included in the book, it is updated only once a year. The final sample included some employees who were not working at the university anymore and might have excluded some recently appointed members of the staff.

Non-response bias might affect the internal validity of the results. Those who do not answer might, for instance, smoke more or be less exposed to ETS. Empirical research suggests that there are different strategies to increase a survey's response rate (Edwards *et al.*, 2002). Several were used in this study: the initial questionnaire was sent with a personalised message; printed questionnaires used coloured ink; a

reminder was sent 20 days later to those who had not returned it, and remaining non-respondents were contacted by telephone. Non-respondents characteristics were studied to find out how non-response might have affected the results. The choice of a representative sample and the strategies used to minimise non-response bias have contributed to the internal validity of the study.

Focus group interviews can be biased by the interviewer's attitudes (Kitzinger, 1999). Both the main researcher and the assistant moderator were nurses with experience in the field of smoking cessation. The main researcher was an ex-smoker and the assistant moderator had never smoked. They introduced themselves to the group as members of the Healthy University Project, wanting to find out more about participants' attitudes towards active and passive smoking and opinions about a non-smoking policy at the University. To minimise bias, the moderator tried to pose questions in a neutral manner, to ask for clarifications when responses seem ambiguous and to avoid participating in the discussion. However, it is possible that some participants, knowing that the researchers were health professionals, may have given answers that they thought the researcher wanted to hear rather than their own opinions.

Measurement of exposure to ETS might also be imperfect. It might be argued that a self-report of perception of "smokiness of the workplace" is an insufficient proxy for workplace exposure. However, the demand characteristics of a lengthy, comprehensive tobacco related questionnaire precluded more items related to ETS. In addition, limited resources hindered the collection of biochemical data or more *in situ* contamination measurements. It would have been interesting to estimate particulate matter and BTEX levels inside the offices, but again, limitation of resources limited the possibilities. In this study, ETS markers are used as supplemental information.

3.10. SUMMARY

A combination of qualitative and quantitative methods was considered appropriate to design a multi-component intervention to reduce smoking use and exposure to ETS at the University of Navarre. Questionnaires, ETS measurements and focus group interviews were the tools selected to gather the data. The limitations of these tools can be overcome by triangulating the results. Results of the combined use of different research strategies can provide a better understanding of the situation at the University than if just one method is used.

The combination of methodologies belonging to different epistemological frameworks can be problematic. In this study especial care has been taken to follow each method's criteria for rigour.

Chapter 4

Main findings

4.1. INTRODUCTION

This chapter describes the response rate and sample characteristics, and presents a brief summary of the findings obtained through the questionnaire, focus groups, and ETS measurements. Further details of the results will be presented in chapters 5, 6, and 7, together with a discussion of the different topics as they emerged.

4.2. QUESTIONNAIRE: MAIN RESULTS

The questionnaire intended to evaluate smoking prevalence, readiness to quit, exposure to ETS, and attitudes towards a non-smoking policy among University staff. As explained in chapter 3, the survey was sent to a representative sample of employees. It is very important to investigate response rate, and especially to find out about the characteristics of non-respondents, to be able to verify whether this has biased the results, and if so, in which direction.

4.2.1. Questionnaire Response Rate

Six hundred and forty one employees were invited to take part in this study via electronic and/or internal mail. The initial response rate after 20 days was 44 per cent (n=285). A written reminder was sent to the remaining 356 non-respondents, together with a second copy of the questionnaire. This brought the response rate up to 407 valid questionnaires; 218 received by electronic mail and 189 by internal mail. The electronic mail proved to be a very useful tool for collecting data. Not only was it very fast - a ten per cent response rate was achieved one hour after the e-mails were sent - but it also made the data collection and entry simpler and less time consuming. Replies were directly entered in the SPSS database, eliminating the risk of data errors, a common feature when the data are entered manually.

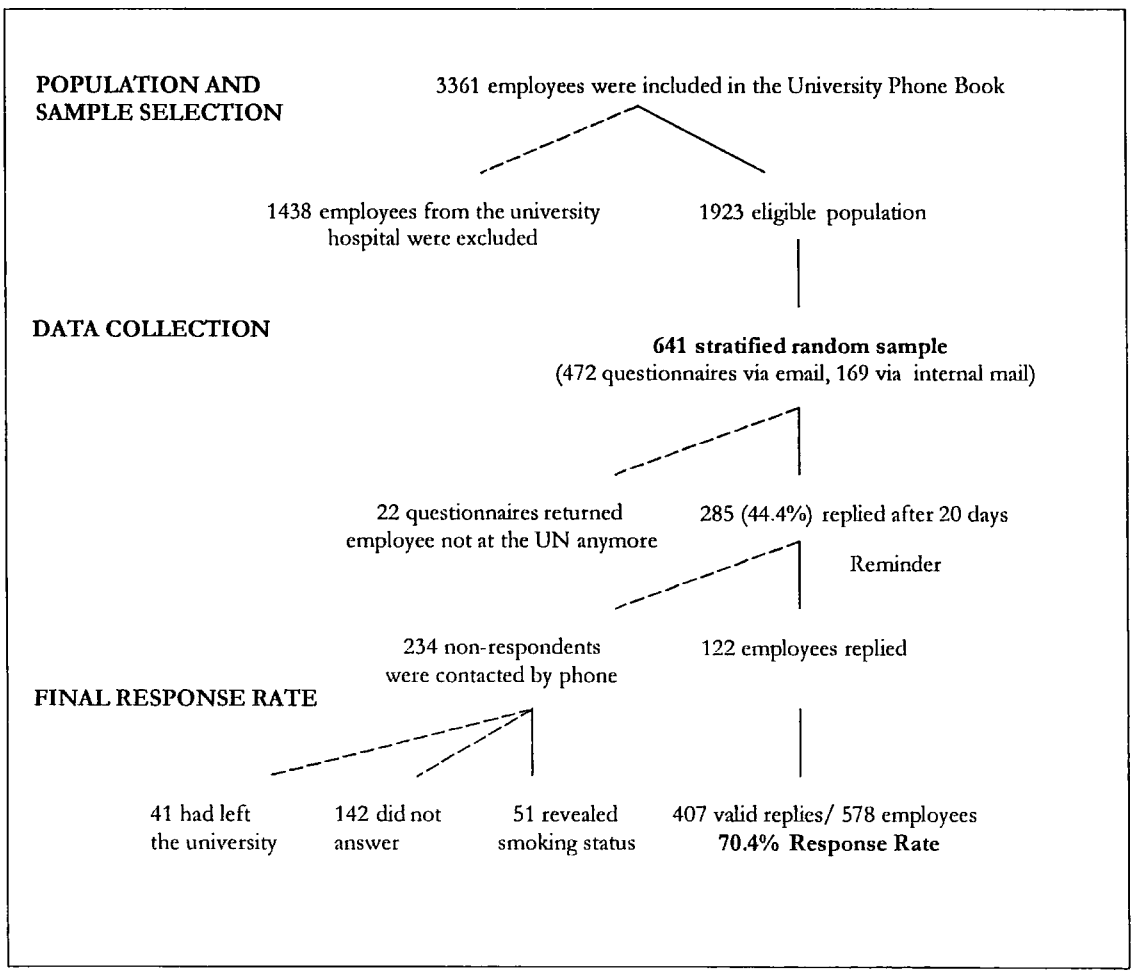


Figure 4.1. Questionnaire response rate flow chart

Some of the questionnaires were returned (n=22) because the person had retired, was abroad, or had left the University. Three attempts, on non-consecutive days, were made to contact non-respondents by internal phone. The calls intended to confirm whether they had received the questionnaire, and at least to find out, if possible, their smoking status. It was only possible to contact 51 of the 234 non-respondents (21.8 per cent), and it was ascertained that another 41 of the non-respondents had left the University.

The final response rate was 70.4 per cent: 407 respondents out of 578 employees working at the University at the time the study was conducted (April-July 2001). This figure can be considered as an acceptable response rate (Cartwright, 1983), compared to similar studies in university settings (Robinson, 1996; Etter *et al.*, 1999; Parry and Platt, 2000). The high participation could suggest that smoking at the University is a topic employees are concerned about.

In order to assess the representativeness of the results, the response rate by gender, faculty, and smoking status was studied (Table 4.1.). Respondents were more likely to be female (53.0 per cent *vs.* 46.9 per cent, $p<0.05$). The difference in response rate by faculty/ departments was not statistically significant. The difference in smoking between respondents and non-respondents contacted via phone (n=51) was not statistically significant (25.7 per cent *vs.* 31.4 per cent $p>0.05$).

Table 4.1. Respondents and non-respondents

	Respondents n (%)	Non-respondents n (%)	Pearson χ^2
Gender (n=407)			
Men	191 (46.9)	101 (59.1)	p=0.008
Women	216 (53.0)	70 (40.9)	
Smoking status (n=401)			
Smokers	103 (25.7)	16 (31.4)	p=0.199
Ex smokers	70 (17.5)	4 (7.8)	
Non-smokers	228 (56.9)	31 (60.8)	
Faculty (n=405)			
Science	162 (40.0)	62 (36.5)	p=0.228
Social Science	132 (32.6)	68 (40.9)	
Administration and Services	111 (27.4)	40 (23.5)	

4.2.2. Socio-demographic data

Socio-demographic characteristics of the sample are shown in Table 4.2. The final sample consisted of 216 women and 191 men. Men were on average older than women. The mean age for males was 39.3 years old (SD 11.5) and for females 34.2 (SD 10.2) (Independent samples T test; $p<0.001$); 54.4 per cent of respondents were single and 44.3 per cent were married. Those who had a family had on average 2.07 children (SD 2.1).

Respondents were highly educated. Only 11.1 per cent of the respondents had a high school education level or less; 43.8 per cent had a university degree, and 44.7 per cent held a postgraduate degree. Of the respondents, 60.3 per cent were doing academic jobs, 25.6 per cent were working in administration and services, and 14.1 per cent held both types of post. Employees of the science faculties/schools (e.g. nursing, medicine and pharmacy) represented 41 per cent of the sample, 40 per cent were part of the social sciences faculties (e.g. law, journalism, philosophy, theology), and 18.9 per cent belonged to others (e.g. administration or independent institutes).

Table 4.2. Socio-demographic characteristics of the questionnaire sample

	Men		Women		Totals	
	n	(%)	n	(%)	n	(%)
Marital status						
Single	104	(54.7)	117	(54.2)	221	(54.4)
Married	85	(44.7)	95	(44.0)	180	(44.3)
Other	1	(0.5)	4	(1.9)	5	(1.2)
Education						
Basic studies (read, write)	4	(2.1)	0	(0.0)	4	(1.0)
Primary education	8	(4.2)	7	(3.3)	15	(3.7)
Secondary education	15	(7.9)	11	(5.2)	26	(6.5)
University Diploma	7	(3.7)	36	(16.9)	43	(10.7)
University Degree	48	(25.3)	85	(39.9)	133	(33.0)
Master	12	(6.3)	7	(3.3)	19	(4.7)
PhD	96	(50.5)	67	(31.5)	163	(40.4)
Academics						
Professor	10	(7.2)	8	(5.1)	18	(6.1)
Senior lecturer	16	(11.5)	9	(5.7)	25	(8.4)
Lecturer	35	(25.2)	27	(17.2)	62	(20.9)
Associate lecturer	13	(9.4)	3	(1.9)	16	(5.4)
Assistant lecturer in charge	9	(6.5)	13	(8.3)	22	(7.4)
Researcher	15	(10.8)	26	(16.6)	41	(13.9)
Assistant lecturer	24	(17.3)	51	(32.5)	75	(25.3)
Others	17	(12.2)	20	(12.7)	37	(12.5)
Administration and services						
Directive	18	(24.3)	9	(10.7)	27	(17.1)
IT services	6	(8.1)	4	(4.8)	10	(6.3)
Administrative	10	(13.5)	29	(34.5)	39	(24.7)
Library	4	(5.4)	8	(9.5)	12	(7.6)
Estates and Buildings	3	(4.1)	0	(0.0)	3	(1.9)
Security	11	(14.9)	0	(0.0)	11	(7.0)
Cleaning Services	0	(0.0)	2	(2.4)	2	(1.3)
Others	22	(29.7)	32	(38.1)	54	(34.2)
Faculty/School/Institute						
Architecture	16	(8.8)	4	(1.9)	20	(5.1)
Sciences	30	(16.5)	33	(15.4)	63	(15.9)
Nursing	1	(0.5)	13	(6.1)	14	(3.5)
Medicine	14	(7.7)	29	(13.6)	43	(10.9)
Pharmacy	5	(2.7)	20	(9.3)	25	(6.3)
Physics	1	(0.5)	1	(0.5)	2	(0.5)
Economics	9	(4.9)	4	(1.9)	13	(3.3)
Journalism	14	(7.7)	13	(6.1)	27	(6.8)
Law	16	(8.8)	8	(3.7)	24	(6.1)
Philosophy	23	(12.6)	40	(18.7)	63	(15.9)
Theology	18	(9.9)	3	(1.4)	21	(5.3)
Language Centre	0	(0.0)	4	(1.9)	4	(1.0)
Science and Technology Institute	5	(2.7)	9	(4.2)	14	(3.5)
Others	30	(16.5)	33	(15.4)	63	(15.9)

4.2.3. Smoking prevalence at the University of Navarre

One of the main purposes of this project was to find out the smoking prevalence among employees at the University of Navarre. Knowing the number of smokers would enable the researcher to estimate the number of people that would be affected by future restrictions. This information is also essential for planning resources if smoking cessation assistance is to be implemented.

Smoking status was defined as having smoked ≥ 100 cigarettes during their lifetime and smoking cigarettes at the present time (USDHHS, 1986). Of the respondents, 25.7 per cent were current smokers, 17.4 per cent ex-smokers, and 56.9 per cent had never smoked. It was only possible to contact 51 of the 171 non-respondents (29.8 per cent). None of them refused to reveal their smoking status: 31.4 per cent were smokers, 7.8 per cent were ex-smokers, and 60.8 per cent had never smoked.

Table 4.3. compares data on smoking prevalence among respondents and non-respondents. A sensitivity analysis has been carried out, assuming that non-respondents who could not be contacted by phone had the same smoking prevalence as non-respondents who were reached. Adding up the figures from respondents and non-respondents, one could suggest that the smoking prevalence among University employees was at most 27.3 per cent.

Table 4.3. Smoking prevalence among respondents and non-respondents contacted by phone.

	Initial Respondents n (%)	**Non-respondents contacted by phone** n (%)	**Sensitivity analysis** n (%)
Smoking status			
Smokers	103 (25.7)	16 (31.4)	158 (27.3)
Ex-smokers	115 (28.7)	4 (7.8)	129 (22.3)
Never smokers	183 (45.6)	31 (60.8)	291 (50.4)
Totals	*401 (100)*	*51 (100)*	*578 (100)*

Table 4.4. compares smoking prevalence among diverse socio-demographic characteristics: gender, age, faculty, position held, and education level. Smoking prevalence was not significantly different between genders.

The number of smokers was evenly distributed between the different faculties and departments. No significant differences were found pertaining to different employment status or education levels (Chi square test; $p>0.05$). Conversely, smoking prevalence was significantly different by age group ($p<0.01$). Older employees (>50 years old) seemed to smoke more than young ones.

Table 4.4. Smoking prevalence and socio-demographic characteristics

	Smokers n(%)	Ex-smokers n(%)	Never smokers n%	Pearson χ^2 p value
Gender				
Men	51(26.8)	60(31.6)	79(41.6)	0.279
Women	52(24.6)	55(26.1)	104(49.3)	
Age groups				
20-34	47(22.7)	41(19.8)	119(57.5)	
36-50	33(26.6)	41(33.1)	50(40.3)	<0.001
> 50	18(31.6)	29(50.9)	10(17.5)	
Faculty				
Science	39(23.4)	44(26.3)	84(50.3)	
Social Sciences	36(24.0)	43(28.7)	71(47.3)	0.133
Others	28(33.3)	28(33.3)	28(33.3)	
Post				
Lecturers	29(22.7)	45(35.2)	54(42.2)	
Assistant lecturers	18(18.8)	21(21.9)	57(59.4)	
Research	15(30.6)	10(20.4)	24(49.0)	0.084
Managers	8(29.6)	11(40.7)	8(29.6)	
Administration	17(27.9)	15(27.9)	24(44.1)	
Estates and Buildings	7(36.8)	6(31.6)	6(31.6)	
Education level				
2nd or 1st education	15(33.3)	14(31.1)	16(35.6)	
University degree	40(23.1)	39(22.5)	94(54.3)	0.031
Postgraduate studies	46(25.7)	61(34.1)	72(40.2)	

Results from this study suggest that smoking prevalence at the University of Navarre was inversely related to the level of education. Employees in the lower education level group had a significantly higher smoking prevalence. The sample is too small to establish comparisons within gender, age and socio-economic groups.

4.2.3.1. Smoking habits

Most smokers in the sample smoked cigarettes (95.1 per cent). Only 6.8 per cent smoked cigars, and 5.8 per cent used a pipe. The mean age when they started smoking was 18.2 (3.4SD). When looking at gender differences, men in the sample, on average, started smoking slightly earlier (17.6 *vs.* 18.8), but the difference was not statistically significant. Smokers had an average history of smoking of 19.6 years (11.8 SD).

Smokers are normally classified, according to the number of cigarettes they smoke into: light smokers less than ten cigarettes per day, moderate smokers between ten to 20 cigarettes per day and heavy smokers, more than 20 cigarettes per day (Department of Health, 2002). Table 4.5. shows the amount of cigarettes consumed per day by gender. Two thirds of the respondents who smoked were smoking more than ten cigarettes per day. Men seemed to smoke significantly more cigarettes per day than women (Chi square $p<0.05$).

Table 4.5. Cigarettes smoked per day by gender

Cig. Day	Men	Women	Totals	Pearson χ^2
	n(%)	n(%)	n(%)	p value
<10	16(34.0)	16(31.4)	32(32.7)	
10-20	24(51.1)	35(68.6)	59(60.2)	0.012
>20	7(14.9)	0(0.0)	7(7.1)	
Totals	*47(100)*	*51(100)*	*98(100)*	

4.2.3.2. Smoking at work

The lack of smoking restrictions at the University of Navarre had allowed smoking to become part of the working ritual. Questionnaire results suggested that cigarette consumption was common at University. Smoking employees were asked about the number of cigarettes smoked while at work. Some (14.3 per cent) smoked 11 to 20 cigarettes during working hours, 38.8 per cent had five to ten cigarettes, and 31.6 per cent of them smoked less than five cigarettes per day at work; 14.3 per cent of them declared they did not smoke while working at the University.

When asked about the locations where they smoke 61.2 per cent mentioned the cafeterias, 54.4 per cent their offices, 24.1 per cent the corridors, and 9.7 per cent at University meetings.

4.2.4. Other findings

There seemed to be a large number of staff exposed to ETS on a daily basis (36.6 per cent). Annoyance from passive smoking seemed to be a common feature. Most employees (70.3 per cent) were found to be annoyed by ETS at the University at least sometimes. Non-smokers were bothered more often by ETS than smokers.

Most of the participants were in favour of a non-smoking policy at the University (82 per cent). Acceptance varied according to their smoking status: 60 per cent of smokers were in favour, compared to 89 per cent of non-smokers.

Most of the employees agreed that a smoky work environment is harmful to their health and that the chance of getting cancer is greater when people smoke at work. Awareness of the risks of passive smoking was lower among smokers.

These and other findings from the questionnaire are presented and discussed extensively in the subsequent chapters.

4.3. FOCUS GROUPS

4.3.1. Attendance

A total of 161 respondents to the questionnaire had expressed their availability to attend a group interview. They were contacted by phone, and eventually 70 of them agreed to take part in the focus groups. A reminder was sent by electronic mail the day before the meeting. Finally, 51 people attended the group interviews (72.8 per cent of those who agreed by phone). Eight sessions were held, four on the science site, and another four on the social science site.

Table 4.6. describes some of the participants' socio-demographic characteristics. Twenty-five men and 26 women took part in the group interviews. The mean age was 35.5 (SD11.6). Most of them were single. Education levels were high, with 86.2 per cent of the sample having a university degree or higher. As explained in Chapter 3, the sample was grouped homogeneously by campus, position held, and agreement with future restrictions. Because the majority of the employees agreed with smoking restrictions being implemented in the University, only one group could be conducted with smokers against future restrictions (number 3).

Table 4.6. Socio-demographic characteristics of focus group participants

Focus group no.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**Totals**
Attendance (n)	6	6	5	5	6	11	8	4	51
(%)	(75.0)	(60.0)	(62.5)	(62.5)	(75.0)	(100.0)	(88.9)	(50.0)	(72.8)
Gender (n)									
Men	3	4	1	3	5	3	3	3	25
Women	3	2	4	2	1	8	5	1	26
Age Mean	45.1	26.5	39.6	39.0	35.2	30.1	41.4	40.0	35.5
(SD)	(10.6)	(2.3)	(12.9)	(2.7)	(8.9)	(10.4)	(5.6)	(16.9)	(11.6)
Marital status(n)									
Single	1	4	1	2	5	10	2	2	27
Married	4	2	4	3	1	1	6	2	23
Other	1	-	-	-	-	-	-	-	1
Level of studies (n)									
High school	-	-	1	-	-	1	-	1	3
Diploma	-	-	-	-	-	1	2	1	4
Degree	-	6	1	1	2	7	1	2	20
Doctorate	6	-	3	4	4	2	5	-	24
Position (n)									
Administration	-	-	1	-	-	2	-	1	4
Researcher	-	-	1	1	-	-	2	-	4
Ass. Lecturer	-	6	1	-	-	8	-	-	15
Lecturer	5	-	1	3	3	1	3	-	16
Senior Lecturer	-	-	-	1	1	-	1	-	3
Managers	-	-	1	-	1	-	2	-	4
Others	1	-	-	-	1	-	-	3	5
Campus (n)									
Science site	-	6	-	5	-	11	8	-	30
Social sciences	6	-	5	-	6	-	-	4	21
Agree with future policy (n)									
Yes	6	6	1	5	6	10	6	4	44
No	-		4	-	-	1	2	-	7
Smoking status (n)									
Smoker	2	1	5	-	2	1	4	1	16
Ex-smoker	1	-	-	-	-	3	-	2	6
Non-smoker	3	5	-	5	4	7	4	1	29

There seems to be no agreement in the literature as to what the ideal number of group participants is. Some authors suggest that the ideal group size is between four and eight people (Kitzinger, 1995), others six to ten (Morgan, 1997), or eight to 12 (Oates, 2000).

One of the limitations of focus group research is the lack of control researchers have over the attendance rate. It is normal practice to over-recruit to ensure the group's size. Oates (2000) for instance recommends inviting 12 people to ensure that between six and ten turn up on the day. In this project, the number of focus group participants ranged from four to 11. Large groups tend to be more difficult to moderate. One of the groups had 11 participants and the moderator had to interrupt sometimes to avoid simultaneous conversations, while in the smaller groups, she had to ask more questions to encourage the participants to talk.

4.3.2. Group dynamics

The following section describes participants and atmosphere in each of the group interviews. The interaction between participants is discussed. A summary of the main topics that emerged in each group is provided. Further explanation and discussion, with quotes from the interviews, will be presented in subsequent chapters. Given the small sample size, and tentative nature of the conclusions, results are reported using terms such as "a few," "several," "many," and "most" rather than exact numbers.

4.3.2.1. Group no. 1

Focus group 1 lasted 34 minutes. It consisted of three men and three women. All of them had a doctoral degree and were working at the faculty of arts. This group included older employees (see table 4.6.). Five of them were lecturers, and one was an associate lecturer. Two were current smokers, one had quit six months earlier, and the other three had never smoked. In general, all of them agreed with the idea of implementing a non-smoking policy at the University. There was a relaxed atmosphere.

One member of the group did not actively participate in the conversation. He made some comments about tolerance and freedom, and then took out some papers and started reading them, listening to the group from time to time. Both the moderator and the participants tried to engage him in the discussion but it was not possible. The fact that he was English and that Spanish was not his first language might have influenced this behaviour. He was a non-smoker.

At the beginning of the focus group session, participants were asked to say whether they were smokers, non-smokers, or ex smokers, explain the situation in their departments, and the extent of exposure to ETS. They discussed whether they were bothered by smoke and whether they considered themselves as "tolerant" or "intolerant" towards smokers. They talked about whether smokers normally ask for permission before lighting up cigarettes, and about their perceptions and knowledge of passive smoking. When the moderator read out the existing legislation on smoking in educational settings, they talked about how a non-smoking policy might be implemented; most seemed to agree that top to bottom implementation would be the best approach. They talked about individuals' rights, problems of implementation, what to do about Very Important Persons (VIPs) who smoke in the University, e.g. head of the departments and professors. The image of a non-smoking university was debated. They also discussed how to educate people to accept smoking regulations.

4.3.2.2. Group no. 2

Group 2 lasted 44 minutes. It consisted of four men and two women. All of them had a degree and were assistant lecturers at the science site (science, medicine, and physics departments). This was the youngest focus group out of the eight conducted. One participant was a smoker and the rest were non-smokers. They were all in favour of a future non-smoking policy. There was a relaxed atmosphere. Two of the participants arrived five and 15 minutes late, after the recording had started. While doing the introductions some of them commented that they were surprised by the invitation to take part in this group, because initiatives like this are not very common.

They started talking about their perceptions of smokiness in the University. Cafeterias and corridors were described as the most polluted areas. They then talked about how the policy should be implemented, and they predicted some problems, for example, the difficulties of ventilating smoking areas, or problems with those who do not observe the rules. They also identified possible benefits of a future non-smoking policy, i.e. it would help smokers to quit. Lack of knowledge about passive smoking, and different types of non-smoking campaigns were discussed. They also raised possible implications that the policy could have for students; this led the group to talk about the process of starting smoking and quitting. The convenience of copying what they called the "American model," meaning a complete ban on smoking, was also discussed.

4.3.2.3. Group no. 3

Group 3 lasted 47 minutes. It consisted of four women and one man. Three of them had a doctorate, one had a degree, and the other one had a university diploma. They all had different posts: senior lecturer, management, researcher, administration and an assistant lecturer. All of them worked in the social science faculties. Although this group did not fulfil the criteria of grouping by job category, they had other things in common: they were all smokers and all except one did not agree with a future non-smoking policy.

There was a tense atmosphere. One could appreciate that they were worried about the possible impact of the *Healthy University Project.* They asked about data confidentiality and the moderator reassured them that everything said in the group would be confidential. Although no information was given as to whether smoking was permitted during the group interview, three of them stayed outside the room to smoke a cigarette while waiting for the meeting to start. The interpretation of this might be that, because of the topic under study, they assumed that smoking would not be welcomed.

The moderator and co-leader had agreed before the start of the interviews that they would neither give permission to smoke, nor ask the participants not to do so.

Participants would then be forced to ask the rest of the members of the group, and this exercise would be used to learn about different group reactions to active smoking in the meetings. After 25 minutes of conversation one of the participants asked, "Sorry, can I smoke?," then another replied: "Well they have provided an ashtray for us!" Immediately, four of them started smoking at the same time. Twenty minutes later, when talking about a recent fire in a local hospital due to a cigarette butt, one of the participants lit a cigarette without asking for permission and two others followed suit.

This example supports the view expressed in other focus groups by non-smokers. Smokers ask "Do you mind if I smoke?" and sometimes they do not even wait for an answer before lighting the cigarette. It also seems that once they have been given permission to smoke one, smokers feel that they are entitled to smoke as many cigarettes as they like without asking again.

Talking about their situation as smokers in the University, they tended to describe themselves as persecuted and under pressure. They claimed there were already some restrictions in the University, for instance, they are no longer allowed to smoke while lecturing. Some of them believed that it is unfair to restrict smoking, as it is a social activity. They also pointed out during the course of discussion that there are other things worse than smoking about which nothing is done. They talked about the legal aspects of changing their working conditions. They compared smoking areas with ghettos, and the idea of rejection and persecution was clear in several of their statements. Some of them perceived hostile conduct from non-smokers towards smokers.

They questioned recent research on the effect of both active and passive smoking, suggesting that the risk might not be as high as claimed. They talked about how they started to smoke and also how to quit. Several times during the discussion they raised the need for having smoking cessation aids at the University. They also stated their interest in the efficacy of the different existing quitting methods.

4.3.2.4. Group no. 4

Focus group 4 lasted 60 minutes. It consisted of three men and two women. One was a senior lecturer, three of them were lecturers, one was working as a researcher, and the fifth was in administration. They were members of the science and medicine faculties and the School of Nursing. All of them were non-smokers and were in favour of a future non-smoking policy at the University.

Two of the participants arrived late due to public buses being on strike in the city that day. One of the participants had a very subtle sense of humour, which made the group laugh many times. Therefore, there was a friendly and relaxed atmosphere.

As in the other interviews, they started talking about their personal situation as smokers or non-smokers. Immediately they described themselves as tolerant or intolerant according to the extent to which they would allow people to smoke next to them. They also explained their particular situation at home, whether their relatives smoked and if they did so inside the house. On several occasions they talked about whether or not non-smokers are bothered by smoke, but do not dare to say anything in order to avoid conflicts with smokers.

When talking about smoking in the University, some of them pointed out the importance of the University being a smoke-free environment in order to set an example to the students. They expressed their worries about the extreme contamination in the cafeterias, and to a lesser extent, in the corridors. They enumerated the problems they foresaw for the implementation process and suggested different solutions to them.

4.3.2.5. Group no. 5

Focus group 5 lasted 56 minutes. It consisted of five men and one women. Two of them had a degree and the other four a doctoral degree. They belonged to the faculties of economics, philosophy and journalism. All except one were non-smokers and all were in favour of a non-smoking policy. One of the participants talked a lot; conversely, another one was very quiet, and it was difficult to get him to speak.

The first speaker of the group started asking the others about their smoker status. It has been documented that in a group people feel more confident to talk once they have ascertained the others' opinions (Krueger, 1998). They talked about whether restrictions would help smokers to quit, and the different types of smoking cessation assistance that could be offered, e.g. nicotine patches or bupropion. They identified two types of smokers: those who accept restrictions and understand that passive smoking bothers other people, and those who do not. They talked about the "Do you mind if I smoke?" type of situation, and their reactions to it.

Talking about the process of policy implementation, some of them suggested a flexible model, with soft pressure, as some of them were worried about the consequences of too much pressure. Then they talked about the process of change, and how other places have become smoke-free, and the effect this would have on the students of the University.

4.3.2.6. Group no. 6

Focus group 6 lasted 59 minutes. It consisted of three men and eight women. Most of them had a university degree and were assistant lecturers. They all worked on the science site. There was one smoker, three ex-smokers, and seven non-smokers. All except one would accept a more restrictive policy than the existing one.

The attendance in this group was 100 per cent, more than expected. As explained in chapter 3, over-recruitment was carried out to guarantee a minimum of four participants in each group. The moderator had to intervene to avoid simultaneous conversations. Even though it was a large group, there was a good level of conversation. The atmosphere was relaxed, and there were many laughs in this session.

The conversation started with one of the participants asking: "Is this a mixed group?" meaning whether there were smokers and non-smokers in the session. The moderator explained that the intention was to group people with similar ideas and common characteristics to avoid confrontation. Then each of them started to explain

their personal situation. Topics coming up from this group were: the position as a role model that the University staff and the University as an institution has to assume. They talked about students, how they initiate the habit, and whether the policy would positively influence them. They also mentioned the problem of "important people" in the University who smoke (i.e. managers and head of departments.). They expressed their concerns about policy reinforcement.

There was a debate as to whether smoking was already prohibited in the University laboratories at that time. The moderator clarified that smoking is prohibited in the laboratories, although people still smoke. This debate pointed out the lack of knowledge about the current legislation, and its lack of reinforcement. Some of them claimed that people are not fully aware about the effects of passive smoking. They talked about non-smokers' rights, and the lack of respect smokers sometimes show when smoking without asking for consent.

Personal experiences and views about smoking initiation and quitting process were shared. They also talked about peer pressure and the different types of campaigns that can be held to help people to quit.

4.3.2.7. Group no. 7

Focus group 7 was the longest one, lasting 70 minutes. It consisted of three men and five women. They all had a degree, and five of them had a doctorate. They were working on the science site and they were lecturers, researchers, or managers. The group consisted of four smokers and four non-smokers. Six of the participants would accept a more restrictive policy than that existing at that time, and two would not.

On this occasion, the goal of grouping participants with similar opinions was not achieved. The atmosphere was tense and there were heated discussions among participants. One of the participants was a heavy smoker, against establishing prohibitions in the University, and this clashed with other participants' views. He became anxious and even offended by some of the comments made by non-smokers

in favour of restrictions. They spent most of the time trying to convince each other about their own ideas. However, the researcher found this confrontation interesting and used it to compare the different group dynamics.

The main topics covered by this group were: description of the current situation in the University, especially in the cafeterias; they talked about discrimination, and about both smokers' and non-smokers' rights; they presented their views about advantages and disadvantages about having a non-smoking policy at the University.

4.3.2.8. Group no. 8

Focus group 8 lasted 55 minutes. It consisted of three men and one woman who were all working on the social science campus, doing different administration jobs. Three of them had attended university. One was a smoker, two were ex-smokers, and the other one had never smoked. All of them would accept a more restrictive policy than the existing one. Two of the participants were chatting all the time so the moderator had difficulties steering the conversation.

They shared their particular experiences as smokers or non-smokers at the University. They gave some examples of conflicts among staff in the University because of smoking. They talked about important people who smoked and how this could hamper the creation of a smoke-free environment. They also explored the reasons why people smoke and the process of quitting. Some of them had mistaken beliefs about the effects of passive and active smoking, such as that smoking one cigarette per day does not harm, or that passive smoking only causes eye and nose irritation. They enumerated possible problems they would expect when implementing the policy and also offered different solutions.

4.3.3. Themes emerging from the focus group

As was explained in more detail in the previous chapter, the analysis of the focus groups was carried out using the principles of content analysis. The transcripts were examined and categorised independently by two researchers, who subsequently

agreed an overall classification. The high level of agreement between the themes generated independently by researchers increases the reliability of the results. The themes identified and subcategories are presented in table 4.7. Trends and majority agreements, however, will be indicated in future chapters.

Table 4.7. Main themes and subcategories identified in the focus groups

Themes	Sub-categories
Reasons to agree with future restrictions	- Health reasons - Discomfort caused by passive smoking - Hygiene - Rights - Image of the university
Reasons to disagree with future restrictions	- It is unfair - It affects work - It creates unnecessary conflicts - There are other worse things - It discriminates
Perceived advantages of implementing a non-smoking policy	- Will reduce consumption - Will favour smoking cessation - Will recognise non-smokers' rights - Will prevent students from starting to smoke - Will improve the image of the university
Perceived disadvantages/problems of implementing a non-smoking policy	- Will generate conflicts - Will marginalise employees; will create ghettos - Will affect work efficacy - Won't help people to quit - People will break the rules - It won't work - Difficult to fit out with smoking areas - Will have a rebound effect: people will smoke more
Solutions to foreseen problems	- Creating smoking areas - Smoking cessation assistance - Education campaigns - Top to bottom implementation
Interactions between smokers and non-smokers	- Reactions to "Do you mind if I smoke?" situation - Breaking the rules examples - Aggressiveness - Not bothered by smoke - Tolerance
Lack of awareness	- Effects of active smoking - Effects of passive smoking - Current smoking regulations
Problematic locations in the university	- Cafeterias - Offices
American model	- Positive aspects - Negative aspects
Students and smoking	- Smoking initiation - Peer pressure - Role models

4.4. ENVIRONMENTAL TOBACCO SMOKE

The results from ETS measurements are presented in more detail in the following chapter. As a summary, it can be said that particulate matters levels were over the permitted limits by the legislation in eight out of the 11 locations examined. Higher concentrations were found during the morning, especially in the University cafeterias. Particulate matter levels were much higher in the cafeterias than in the halls. Benzene levels were also very high in four of the six cafeterias examined. The ETS measurements evidence supported both the questionnaire and focus group results.

4.5. SUMMARY

The survey carried out to assess the situation in relation to smoking at the University of Navarre managed to get many employees involved. Participation levels were high in both the questionnaire and the focus groups. Results suggest that around a quarter of the employees of the University of Navarre smoke. Employees seem to be exposed to high levels of ETS, according to the questionnaire self-reports and to the objective measurements taken. Support for smoking restrictions at the University appears to be high, even among smokers. These and other results are discussed in more depth in Chapters 5, 6, and 7.

Chapter 5

Passive smoking: a health, legal, and social threat at the University of Navarre

5.1. INTRODUCTION

This chapter presents compiled evidence of employee exposure to ETS at the University of Navarre. Triangulation of the questionnaire, ETS measurements, and focus group results is carried out to complement validate the findings. The health, legal, and social consequences of the current situation are discussed.

5.2. EXPOSURE TO ENVIRONMENTAL TOBACCO SMOKE

Exposure to ETS is a preventable cause of significant morbidity and mortality. In this study, indirect methods were used to estimate the current levels of contamination employees are exposed to while working at the University. Employees were asked about the number of hours of exposure, both at work and at home, and their perceptions of the smokiness at the workplace. Two different types of

atmospheric markers (PM and benzene) were used to estimate the levels of contamination in University cafeterias and vestibules/corridors.

5.2.1. ETS exposure at work

Previous research suggests that for an individual who lives with non-smokers, the workplace is often the major source of ETS exposure (Hammond *et al.*, 1995). This investigation was partly undertaken to study the levels of ETS to which employees are exposed while at work. The questionnaire enquired about daily exposure, perceived smokiness, and annoyance from passive smoking in different locations of the University. According to the survey results, the majority of university employees (57.2 per cent) occupied a shared office. The average number of workers in shared offices was 4.6 (SD 2.6). Of the respondents 41.1 per cent shared their office with at least one smoker. When asked about the number of hours exposed to ETS (Table 5.1.), 26.6 per cent of employees stated that they are regularly exposed for more than one hour per day, and 19.6 per cent for more that three hours per day.

Table 5.1. Self-assessment of daily exposure to ETS at work

Time	Totals n (%)
Not regularly exposed at work	236 (63.4)
<1 h	37 (9.9))
1-2 h	26 (7.0)
3-5 h	26 (7.0)
6-9 h	21 (5.6)
>10h	26 (7.0)
Total	*372 (100)*

Reported exposure to ETS is consistent with other studies, such as the CAREX study (European database on occupational carcinogen exposure) which estimated that 22.6 per cent of Spanish workers are exposed to ETS at their workplace (Kauppinen *et al.*, 1998).

Respondents were also questioned about their perceptions of smokiness at their workplace. Results are presented in table 5.2.

Table 5.2. Perceived smokiness at University by smoking status

	Totals n (%)	Smokers n (%)	Non-smokers n (%)	Pearson χ^2
Extremely smoky	9 (2.3)	0 (0.0)	9 (3.1)	
Very smoky	25 (6.4)	11 (11.0)	14 (4.8)	
Somewhat	65 (16.6)	24 (24.0)	41 (14.1)	p=0.06
Slightly	114 (29.2)	29 (29.0)	85 (29.2)	
Not at all	178 (45.5)	36 (26.0)	142 (48.8)	

Although few respondents considered their workplace extremely or very smoky (8.7 per cent), 45.8 per cent considered it to be somewhat or slightly smoky. Smokers had a higher overall mean ranking on the 1 to 5 scale of smokiness compared to non-smokers (Mann-Whitney U test; Z=-2.54 p=0.01). This is consistent with other studies that have found that smokers have a greater tendency than non-smokers to be in situations where they find themselves among other smokers (Europe Against Cancer, 1993).

Employees were also asked in which locations and how often they were bothered by passive smoke. Responses were presented on a Likert type scale rating from never = 1, sometimes = 2, often = 3, very often = 4, and always = 5. Figure 5.1. shows frequency of annoyance at different University locations.

Figure 5.1. Annoyance by ETS at different locations at the University.

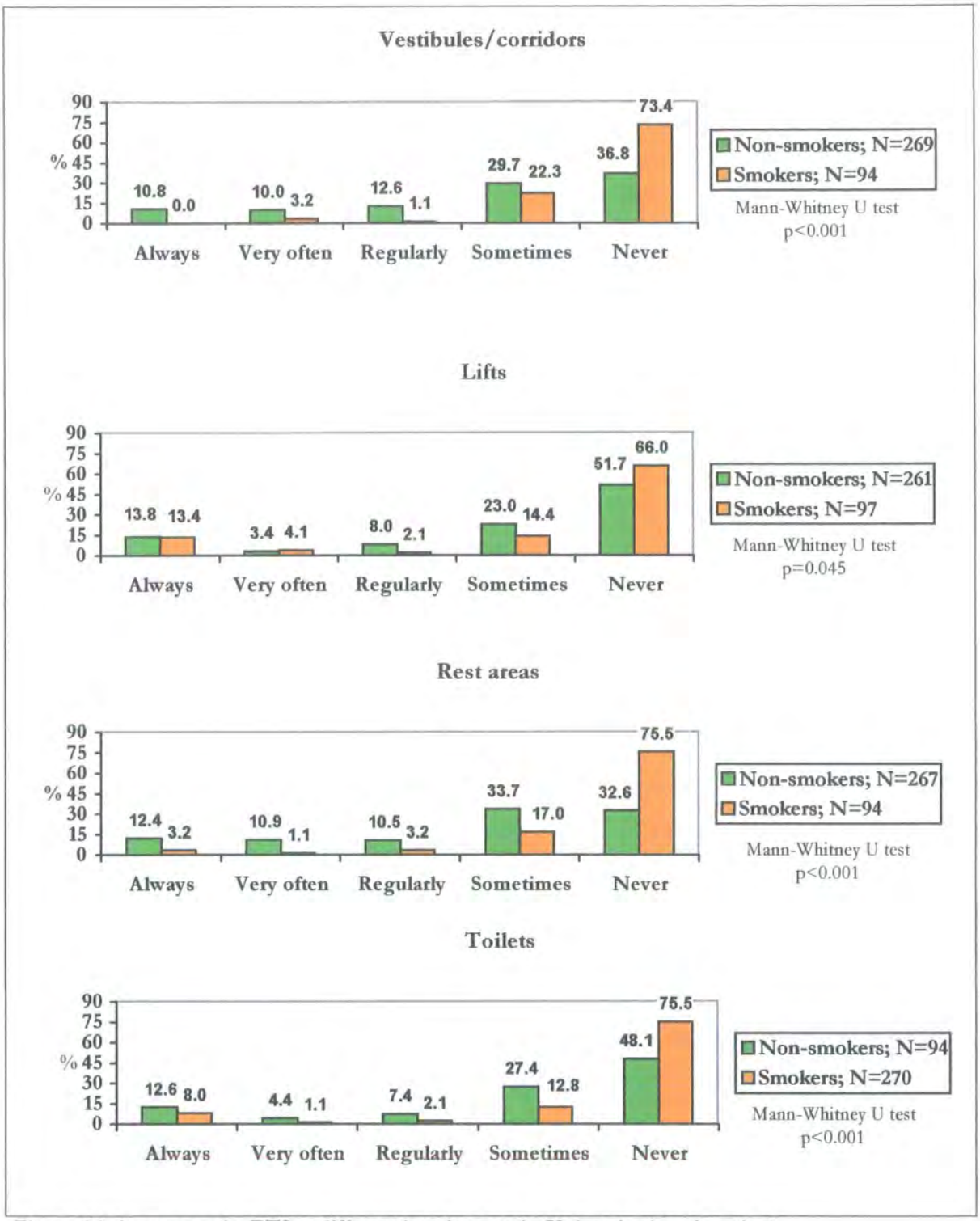


Figure 5.1. Annoyance by ETS at different locations at the University (continuation).

Most employees (70.3 per cent) were found to be annoyed by ETS at the University at least sometimes. Non-smokers were bothered more often by ETS than smokers. The Mann-Whitney U test shows that differences were statistically significant in all locations. Cafeterias, corridors, and meeting rooms are the places where respondents

were more often bothered by passive smoking. Sixty-three per cent of non-smokers were at least regularly bothered at the cafeteria and 33 per cent of them in the University corridors/entryways.

No studies have been found that have measured annoyance from passive smoking in the workplace in Spain. A study carried out in the Netherlands within various sectors of Dutch industry, found that more than 66 per cent of non-smokers claimed to be bothered by tobacco smoke at the workplace (at least sometimes) (Willemsen *et al.*, 1996). Another study carried out in 114 worksites in the United States found that about 35 per cent of employees were bothered regularly by smokiness at work (Thompson *et al.*, 1995). One can conclude that, as in other workplaces without an explicit non-smoking policy, annoyance from ETS at the University of Navarre was considerable.

Self-reported exposure results suggest that an important number of University employees were exposed to ETS which made their working conditions both uncomfortable and exposed them to an unsafe working environment. As explained in chapter 2, there are no safe levels of exposure to ETS. On the other hand, literature suggests that if a smoking ban were implemented and exposure from ETS were eliminated, the increased risks of eye and nasal irritation would be reduced by 60 per cent, of heart disease by 30 per cent, and of lung cancer by 20 per cent (California Environmental Protection Agency, 1999).

5.2.2. ETS exposure at home

Information on the smoking status of participants' relatives, as well as ETS exposure at home, was collected. This can be used for planning future smoking cessation interventions. It has been suggested that smoking cessation interventions at the workplace are more successful when extended to relatives of the company's employees (Farkas *et al.*, 1999). Smoking bans reduce the number of cues and make it easier for the smoker who is trying to quit. However, if he or she goes back home and his or her relatives are still smoking, the likelihood of relapse is higher.

When asking about the exposure to passive smoking at home, this investigation differentiated those individuals married to a smoker from those who were not, because the grade of exposure is different. There have been documented increased levels of nicotine absorption among individuals married to smokers (USDHHS, 1986).

Table 5.3. presents data on numbers of hours of exposure at home. More than half of the employees (53.3 per cent) lived with someone who smokes. One hundred and ninety one employees, 46.9 per cent of the sample, declared they were not being exposed to passive smoke at home; 17.7 per cent were married to a smoker, and 41.3 per cent were exposed to other smokers.

Table 5.3. Self-assessment of daily exposure to ETS at home

Time exposed to ETS per day during last month	Totals n	(%)
I've never been exposed at home	191	(46.9)
Yes, I've been exposed at home:		
Wife/Husband smoker		
<1 h	37	(9.1)
1-2 h	14	(3.4)
3-5 h	10	(2.5)
6-9 h	6	(1.5)
>10h	5	(1.2)
Subtotal	*72*	*(17.7)*
Other smokers at home		
<1 h	74	(18.2)
1-2 h	27	(6.6)
3-5 h	29	(7.1)
6-9 h	9	(2.2)
>10h	29	(7.1)
Subtotal	*168*	*(41.3)*

Totals sum more than 100 percent because some respondents were exposed to ETS both from their partner and other smokers at home

Smokers were more likely to have others smokers at home: 67.9 per cent of smokers lived with one or more smokers (compared to 58.6 per cent of the ex-smokers, and 45.6 per cent of the non-smokers; chi square=15.08; $p<0.001$), which would probably impede their attempts to quit.

Passive smoking at home is a serious health risk, especially for children. As mentioned in chapter 2, there is strong evidence that parental smoking increases the risk of sudden infant death syndrome and the risk of respiratory diseases in

schoolchildren. In this study, out of 148 respondents who had children, 90 (60.8 per cent) either smoked or lived with one or more smokers. This suggests that an important number of the University employees' children might be exposed to ETS. There is therefore a need for education about the risks of smoking at home, particularly in relation to respiratory diseases in children.

The level of exposure to ETS reported at home and at work might be even higher if one takes into account a possible misclassification bias (Last, 1995). Several studies have reported a tendency towards underestimation of hours exposed to ETS (Coultas *et al.*, 1990; DeLorenze *et al.*, 2002). Individuals are often unaware of their exposure to ETS, particularly outside the home. In studies using both self-reporting and biological markers, it was found that the exposure prevalence when determined using biological markers was higher than that self-reported by individuals (Emmons *et al.*, 1992).

5.2.3. ETS measurements

Respondents identified cafeterias, entry areas and corridors as the most contaminated places at the University. In order to validate these opinions with objective data, measurements of contamination levels were taken. Respirable PM were used as markers for particle phase constituents of ETS, and benzene, toluene, etilbenzene, and xylenes for the vapour phase ones. Figure 5.2. shows the University campus map and points out the different buildings where contamination was measured.

1: University Main Hall; 2: Architecture; 3: Social Sciences; 4: Law, 5: Science; 6: Science Library

Figure 5.2. Locations where ETS measurements were taken

5.2.3.1. Particulate matter

One of the most commonly used indicators of environmental pollution by tobacco smoke is the concentration of respirable PM. This has been found to be two to three times higher in houses with smokers than in other houses (WHO, 2000). PM is classified according to its size: PM_{10} refers to particulate matter which passes through a size-selective inlet of 10 μm aerodynamic diameter; the same applies for $PM_{2.5}$ and PM_1, but with aerodynamic diameters of 2.5 μm and 1 μm respectively.

Health effects of PM in humans depend on particle size, concentration, morphologies, and chemical compositions. There are important differences in the composition of pollutant mixtures in outdoor and indoor air. For example, in outdoor air there are traffic generated emissions, whereas indoor air pollution is generated from tobacco smoke or from cooking with biomass-fuelled stoves. The finer fractions, such as $PM_{2.5}$ and PM_1, are the ones capable of deep lung/airway penetration, and are therefore more dangerous (WHO, 2000). A large number of

epidemiological studies have been published showing that there is an association between ambient concentrations of particles and shorter life expectancy (Department of Health, 2001). The WHO (2000) states that it is not possible to define a threshold below which no health effects occur.

Under existing legislation[1] at the time the measurements were taken (May 2001), PM_{10} should not exceed a 24 hour limit value of 50 $\mu g/m^3$. A 50 per cent margin of tolerance is given until the year 2005, giving a threshold for concentrations between 50-75 $\mu g/m^3$. The European Union directive emphasises that reduction strategies should aim to reduce concentration of fine particles as part of the total reduction in concentration of PM.

These values are legislated for "ambient air", meaning outdoor in the troposphere. Unfortunately there is no legislation for indoor PM levels. This lack of legislation is critical, as people tend to spend most of their time indoors. The EU is working on a new directive to regulate indoor contamination levels, but this has not yet been published.

Figure 5.3. shows concentration and daily variation of PM_{10} in the University cafeterias. The current EU 24 hour average limit value of $50\mu g/m^3$ is shown, to give an indication of the significance of these findings. Higher concentrations were found during the morning, especially in locations 1 and 6. Lower concentrations were found in location 4, where levels remained around $100\mu g/m^3$ most of the day. In most locations, results show daily fluctuations and peaks that are closely correlated with coffee breaks (10-11h) and lunch breaks (13-14h), when the cafeterias are more crowded.

[1] Ambient Air Quality Framework Directive 96/62/EC and daughter directive 1999/30/EC

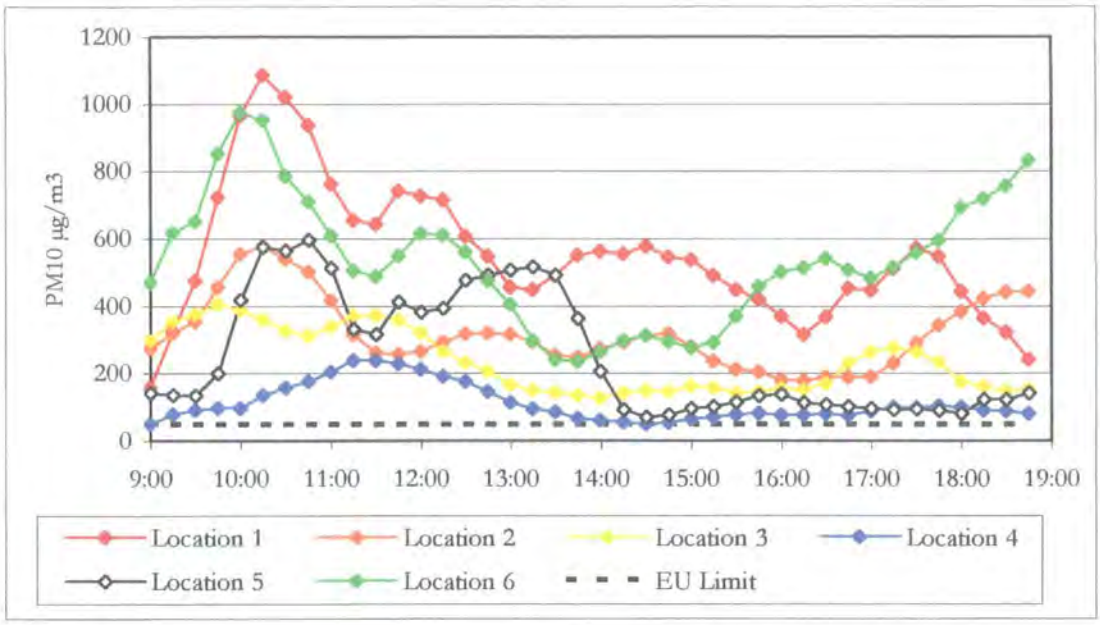


Figure 5.3. Particulate matter level variation for a 10h period in the different University cafeterias

The following table presents average values of PM concentration by diameter, obtained in the different University cafeterias during business hours, from 9:00am until 7:00pm on a random day.

Table 5.4 Average concentration of particulate matter (µg/m³) in the cafeterias (9:00-19:00h)

Diameter	Location 1	Location 2	Location 3	Location 4	Location 5	Location 6	ANOVA p value
PM 10	548.4	317.5	234.2	110.2	257.7	530.2	<0.001
(SD)	(318.8)	(154.7)	(143.5)	(84.8)	(326.6)	(295.9)	
PM 2.5	430.4	253.7	193.0	90.6	209.9	485.3	<0.001
(SD)	(309.9)	(138.1)	(135.4)	(77.9)	(301.0)	(287.7)	
PM 1	410.5	240.6	183.3	84.8	199.3	466.0	<0.001
(SD)	(303.7)	(134.9)	(132.6)	(76.1)	(293.7)	(285.8)	
PM 10 in 24 hour†	277	176	121	60.1	123	243	--

† Averages represent 24 hour estimations based on 10 hour measurements in order to establish comparisons with existing legislation

The cafeteria located in building number 6 was the most contaminated. The opposite was found in building number 4, where the total concentration of particles in the

cafeteria was less than 150 μg/m^3. ANOVA test confirmed that all PM levels (10. 2.5 and 1) differed statistically between locations (all p values<0.001).

As explained in chapter 3, measurements took place during a period of ten hour (9.00-19.00h). To be able to compare these results with the 24 hour limits established by the current legislation, it was supposed that during the other 14 hour, concentrations of particles were equal to the lowest level detected during the day. In general this lowest value coincided with first levels in the morning, before tobacco consumption started.

Five out of the six cafeterias studied exceeded the limit values for 24 hour established by the legislation, (50 μg/m^3). Only the cafeteria in building number 4 was under the tolerance margin given by the EU until the year 2005 of 75 μg/m^3.

Figure 5. 4. shows the concentration and daily variation of PM_{10} in the vestibules of the main University buildings. Contamination levels in the entryways were lower than those found in the cafeterias. Locations 5 and 6 had higher concentrations of PM.

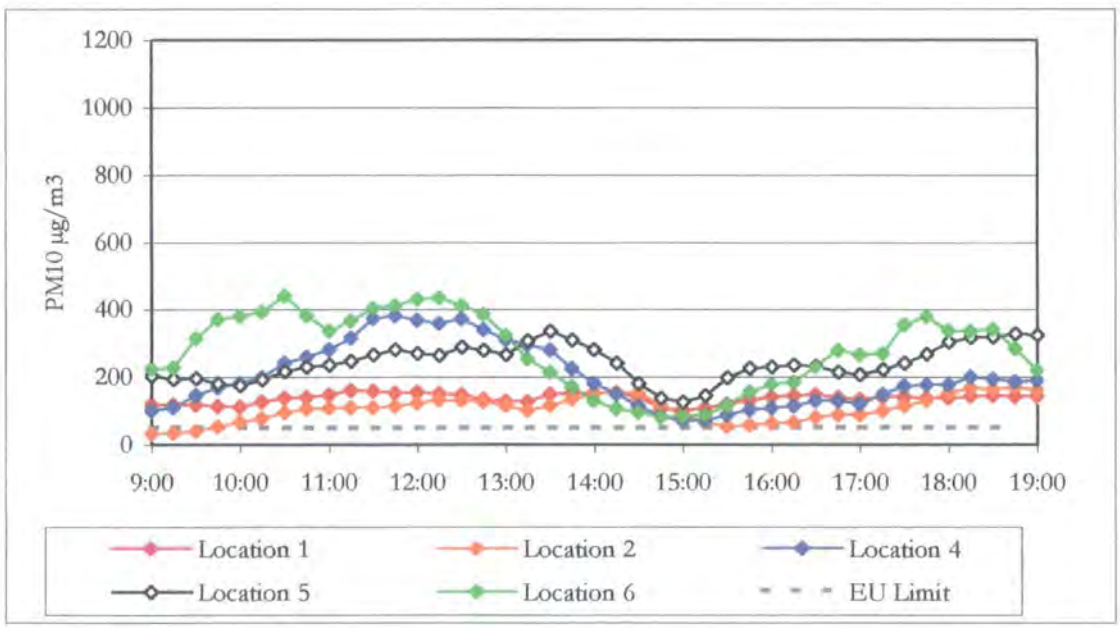


Figure 5.4. Particulate matter level variation for a ten hour period in the different vestibules

Higher concentrations were found during the morning, especially in locations 1 and 6. Lower concentrations were found in location 4, where levels remained around 100μg/m^3 most of the day. In most locations, results show daily fluctuations and peaks that are closely correlated with the coffee breaks (10-11h) and lunch breaks (13-14h), when the cafeterias are more crowded.

The following table shows average contamination levels in the vestibules of the various University buildings during a ten hour period.

Table 5.5. Average concentration of particulate matter (μg/m^3) in the vestibules (9:00-19:00h)

Diameter	Location 1	Location 2	Location 3#	Location 4	Location 5	Location 6	ANOVA p value
PM 10	135.7	103.7	-	199.8	242.0	278.3	<0.001
(SD)	(39.4)	(52.4)		(112.5)	(105.8)	(169.9)	
PM 2.5	54.9	62.3	-	131.2	82.3	221.0	<0.001
(SD)	(12.9)	(27.6)		(83.1)	(59.4)	(151.6)	
PM 1	44.6	53.9	-	120.0	67.5	207.9	<0.001
(SD)	(11.8)	(25.6)		(79.1)	(54.6)	(147.4)	
PM 10 in 24 hour†	78	52	-	117	147	145	--

Measurements could not be taken in the vestibule of the location 3 due to lack of socket during study period.

† Averages represent 24 hour estimations based on ten hour measurements in order to establish comparisons with existing legislation

The highest levels were found in location 6, where contamination was similar to that found in some of the cafeterias. This might be explained by the fact that the this vestibule has a lower ceiling and lacks adequate ventilation, which results in a higher concentration of PM. ANOVA tests confirmed that all PM levels (10, 2.5 and 1) differed statistically between locations (all p values<0.001).

Estimations for average concentration of PM for a 24 hour period have been calculated, using the same assumptions as in the 24 hour estimations for the cafeterias. Results are presented in the above table. All vestibules/corridors studied except number 2, are clearly above the 24 hour limit established by the EU legislation (50-75 μg/m^3).

Contamination levels in the entryways were lower than those found in the cafeterias. Locations 5 and 6 had higher concentrations of PM. Results showed daily fluctuations and peaks that could be correlated with the breaks between lectures on the hour.

5.2.3.2. Benzene, toluene, ethylbenzene, and xylenes (BTEX)

As explained in chapter 3, one of the objectives of the contamination measurements was to determine benzene levels at different locations in the University. However, because the gas chromatography of this compound also brings concentrations of toluene, ethylbenzene, and xylenes, and these are also constituents of the vapour phase of ETS, the concentrations of all four will be presented in this section.

Benzene is a chemical widely used to make plastics, dyes, detergents, drugs, and pesticides. It is also one of 4,000 chemicals found in cigarette smoke. Breathing benzene can cause drowsiness, dizziness, and unconsciousness. Long-term benzene exposure, defined as 365 days or longer, causes effects on bone marrow, and can cause anaemia and leukaemia. According to the ATSDR (1997), benzene can cause excessive bleeding and can affect the immune system, increasing the chances of infection.

No studies are available that directly characterise the health hazards and dose response relationships for exposures to whole mixtures of benzene, toluene, ethybenzene, and xylenes. However, results of model situations and experimental exposures with BTEX strongly suggest that joint neurotic action is plausible (USDHHS, 2002).

Average concentrations of BTEX were measured in different cafeterias on the campus to estimate the population's exposure. Results are presented in table 5.6.

Table 5.6. Average concentration of benzene, toluene, ethylbenzene, and xylenes in the cafeterias during a 7-day period

Cafeterias	Benzene $\mu g\ m^{-3}$	Toluene $\mu g\ m^{-3}$	Xylenes $\mu g\ m^{-3}$	Ethylbenzene $\mu g\ m^{-3}$
Location 1	6.1	46.3	23.3	6.0
Location 2	5.3	22.7	22.8	6.3
Location 3	5.4	20.1	13.8	3.2
Location 4	4.7	20.6	15.6	3.8
Location 5	7.3	54.4	18.8	4.2
Location 6	6.6	25.3	20.0	4.6

According to the measurements, all cafeterias, apart from the one in building number 4, are above the exposure threshold for benzene (5 $\mu g\ m^{-3}$). The cafeterias in the buildings 5 and 6 had the highest contamination levels. Even though the building number 4 showed permitted levels, the air is still contaminated by carcinogenic particles.

There is no Spanish or European legislation regarding what levels of toluene, xylenes, and ethylbenzene are acceptable. However, bearing in mind their neurological toxicity and the possibility that they can act synergistically to produce adverse health effects, the levels found at the University cafeterias should be a source of concern; especially the benzene levels, as this compound is carcinogenic to humans. The WHO maintains that no safe value of exposure to benzene can be recommended (WHO, 2000).

These results highlight once more the high levels of contamination existing in the areas under study. These measurements were taken during May and June, when staff and students tend to gather outside during the break time, and the cafeteria windows are opened all day. The particulate levels could be considerably higher during the winter months.

Staff working in bars or restaurants has the highest exposure to tobacco smoke. In fact, several workers at the cafeterias have expressed their concerns to the members of the team measuring contamination. They have explained that they often suffer from headaches, sore throat, eyes, and nose irritation, and coughs, which are reported to be unequivocal symptoms of ETS exposure.

High levels of contamination have been found, not only in enclosed areas, but also in open spaces, such as the vestibule in building number 6. These results strongly suggest that the University of Navarre employees and students are subjected to serious risks and that urgent measures must be taken to drastically reduce PM and benzene levels.

5.3. PERCEPTIONS AND AWARENESS OF PASSIVE SMOKING RISKS

As explained in chapter 2, public opinion on passive smoking is a determinant factor in the success of non-smoking policies. Employees comply with regulations if they understand and value the rationale behind them. Passive smoking risk beliefs were measured using a 5-point Likert-type scale from strongly agree (5) to strongly disagree (1).

Figure 5.5. compares smokers' and non-smokers' beliefs on the risks of ETS. Perceived risks were significantly higher amongst non-smokers. Although both smokers and non-smokers agreed that working in a smoky environment was harmful to their health, smokers had a lower level of agreement over the items "the chance of getting cancer for non-smokers is greater when people smoke at the work place" and "exposure to cigarette smoking at work is a serious problem for me." The Mann Whitney U test shows that differences were statistically significant in all statements.

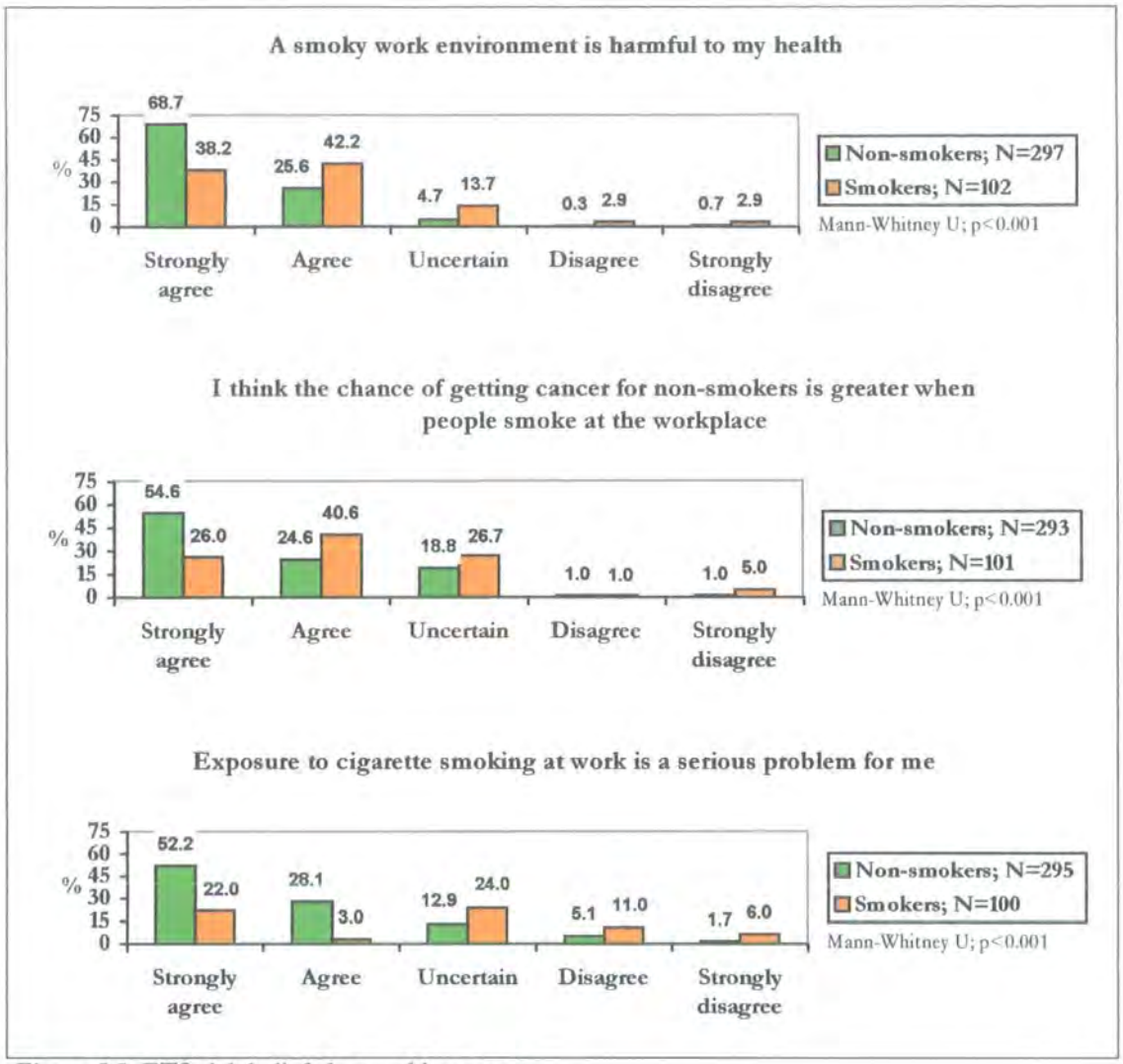


Figure 5.5. ETS risk beliefs by smoking status

Data from the focus group interviews also suggest that both smokers' and non-smokers' awareness of the risks of ETS exposure is not very high. Non-smokers described the situation like this[2]:

[2] Transcripts have been translated trying to preserve the original content. Terms in square brackets are transcriptional suggestions, explanations or information regarding happenings that do not appear in the speech [e.g. laughter or anger]. A question mark in ordinary brackets marks an inaudible phrase. Three dots indicate unfinished sentences and the following pause. Three dots in square brackets mark omissions.

> The problem is that some smokers are not aware at all. They question scientific evidence on the risks of active smoking and even more about passive smoking.
>
> Male, non-smoker, science, group 4

> I think smokers believe this [the issue of passive smoking] is a silly thing.
>
> Male, non-smoker, social sciences, group 5

> No one has explained to me what the real dangers to a passive smoker are, well apart from the argument that a passive smoker smokes... What amount of nicotine , tar, etc. am I inhaling if I work with someone who smokes?
>
> Male, non smoker, social sciences, group 5

The following passage illustrates how a smoker describes passive smoking as something trivial, not important enough to be worried about:

> There are so many things that pollute the air in a different way, aren't there? It's a way of becoming too refined with everything, isn't it? I don't think it is good to try to promote that everything is perfect around you, because then you cannot work. We might have to think then about the noise, the type of chairs we are using for our back... I think this makes us worry about superficial things...
>
> Female, smoker, social sciences, group 3

Questionnaire and focus group results suggest that a health education campaign about the dangers of passive smoking would be beneficial. Education is important because it prepares the ground for compliance with smoking restrictions (Batten, 1991; USDHHS *et al.,* 1996; Goodin and McAllister 1997). If employees and students understand the health rationale behind the smoking restrictions, they are more likely to support them. A study carried out in the US suggested that public support for smoking restrictions and bans helped to ensure the smooth implementation of non-smoking policies (Davis, 1998).

5.4. SOCIAL ATTITUDES AND NORMS TOWARDS PASSIVE SMOKING

As explained in chapter 2, Spain is a country with a high smoking prevalence. Restrictions and policies to control consumption are increasing, and although social conditions do not favour the habit as much as before, smoking is still very much accepted. Qualitative methods offer an opportunity to better understand the social context of interactions between smokers and non-smokers. In this section, reports of experiences of confrontation (or avoided confrontation) and of how both parties responded to each other's actions and reactions are presented, together with implications for tobacco control policy and practice.

5.4.1. Tolerance

Despite the fact that tolerance as an issue was not included in the focus groups interview guide, the topic of whether smoking should be tolerated or not emerged in 6 out of the 8 focus groups. Both smokers and non-smokers talked about it. Examining the testimony of non-smokers in particular, data suggests that asking someone not to smoke is perceived as synonymous with being intolerant:

> I am not a smoker, then.... what happens is that I am not too intolerant with tobacco, to say it in a certain way, I mean, I am not too bothered except in certain circumstances when the accumulated smoke makes you a passive smoker.
>
> Male, non-smoker, science, group 4

> I am also quite tolerant, like if I am with a person that wants to smoke and we are in a place that is not too enclosed, I don't mind this person smoking.
>
> Female, non-smoker, science, group 4

> I am tolerant, I don't mind people smoking in the car, nor in my office. Though I think it is a thoughtful gesture when they ask before.
>
> Male, non-smoker, social sciences, group 5.

A tolerant attitude seems to be part of the social norms and expectations towards smoking in Spain. This is demonstrated by the mere existence of a lobby group called "Fumadores por la tolerancia" (Smokers for tolerance) founded on 15 March 1995. On their web page[3], this group claims the need for tolerance, common sense, and courtesy as an alternative to restrictive non-smoking policies. This argument has frequently been used by the tobacco industry (Cardador *et al.*, 1995). Figure 5.6. shows the front page of the magazine published by this group -"The Smoker"(issue no.3). A large "Tolerance" sign can be observed over the Spanish map. The heading literally says "A country without bad airs." This expression has a double meaning in Spanish and can be also translated as: "a country without bad tempered, angry people." The message this publication wants to transmit is clear: those who do not permit (tolerate) smoking around them are bad tempered people who easily get angry.

Figure 5.6. "The Smoker": Spanish smokers rights publication

The influence of this group in Spain is manifest in one of the participant's comments:

> I don't smoke, and in a certain way I would be a "non-smoker pro tolerance," I mean, there should be an escape route for the poor smokers, at least while they are smokers, or things need to be done to help them to quit.
>
> Male, non-smoker, social sciences, group1

[3] http://www.clubfumadores.org/

The term *tolerance* is often used to argue against smoking restrictions, and examples can also be found in the Spanish media. For instance, the local newspaper in Navarre, published on the 31st of May 2002 (World No Tobacco Day) an editorial entitled "Libertad y Tolarancia" (Freedom and Tolerance). The author, the head of a Spanish Cigar Smokers Club, stated that there is no need to impose smoking restrictions at the workplace if people are tolerant (Ilario, 2001).

One might argue that "intolerance" is recognised by focus group participants as a pejorative term, and that social expectations require them to be tolerant and considerate with smokers. This is not surprising. As Mendus (1989) explains, toleration is normally seen as a virtue in individuals and as a duty in societies. Tolerance is a fundamental element of diversity, individualism, and freedom. It has been defined as "to allow something that one does not like or agree with to happen or continue" (Hornby, 1997). The concept of tolerance is broad, covering both things disliked and things disapproved of. However, ought one to tolerate everything? Where is the dividing line?

It is universally known that there are things like theft, murder, or rape that cannot be tolerated. On the other hand, there are other acts that cannot be persecuted systematically, or the society would be in danger of becoming repressive. As Aguiló (2001) suggests, lies are bad, but to persecute every single lie of everybody, in every circumstance, would result in an oppressive society; which is why the law only persecutes "qualified" lies, such as perjury or calumny.

However, being tolerant is not just being neutral or indifferent. It seems necessary to have a set of criteria to distinguish between when one should try to prevent something or tolerate it. According to Aguiló (2001), one should look to the common good as the only legitimate cause of tolerance. One should compare the consequences of not tolerating something with the benefits of a tolerant situation. For instance, in order to have a friendly atmosphere in the workplace, one can tolerate a colleague's terrible perfume, or the noise he or she makes when chewing gum. But ought one to tolerate being exposed to passive smoking in order to prevent smokers from feeling repressed, without freedom, or discriminated against? Certainly

smokers from feeling repressed, without freedom, or discriminated against? Certainly not; the evidence of the effects of passive smoking is too great to ignore. In the same way one would not tolerate someone driving on the wrong side of the motorway because of the harm he/she would cause to him/herself and others, so one cannot be forced to tolerate passive smoking at the workplace.

Non-smokers might sometimes choose to tolerate passive smoking at home, or at work, even acknowledging the hazards of passive smoking, due to different reasons, such as love or friendship. But this consent must be given freely, that is, not because it was a superior asking for permission to light up. One should not be "forced" by social norms to tolerate passive smoking at work eight hours a day, five days a week.

The tolerance discourse has been misused by the tobacco industry and some groups of smokers, and should be challenged, making it clear that tolerance has its limits, and those limits begin when the action to be tolerated harms other people. Tolerance is allowing others to do things one does not approve of on the basis of one's respect for their right to decide what happens to their own bodies. However, it is not intolerant to refuse to be poisoned by the actions of others. As Goodin says (1989), smoking is not an action that merely provokes offence, disgust, or disapproval, but it also physically harms others. When this is perceived by society, it becomes not an issue of tolerance but of self-protection.

5.4.2. Non-smokers' attitudes to people smoking near them

The tobacco industry recommends "common courtesy" as the solution to potential conflicts over smoking in public places and as an alternative to policies that restrict or ban smoking. Specifically, the industry suggests that non-smokers "mention annoyances in a pleasant and friendly manner", and that smokers ask others, "Do you mind if I smoke?" (Office on Smoking and Health (OSH) and CDC, 1990). Some smokers in this study seemed to believe in "common courtesy" as an alternative to smoking restrictions, and suggested that non-smokers should state their opinions assertively. To quote one focus group participant:

> I think this is a particular problem for those who don't dare to say it. No matter whether there exists a law that supports it. It is the problem of those who don't know how to communicate with people and say, "look, like it or not your cigarette is bothering me."
>
> Female, smoker, social sciences, group 3

However, previous research suggests that this approach is unlikely, by itself, to eliminate exposure to ETS, and that legislative or administrative mechanisms are the only effective strategies to eliminate involuntary smoking (OSH and CDC, 1990).

In this study, non-smokers described incidents in which they had attempted, either verbally or non-verbally, to let a smoker know that they were bothered by ETS. Data indicate that when faced with ETS exposure, non-smokers tend to avoid confrontation:

> Then the question comes, do you mind if I smoke? Well, in fact yes, but you answer no, unless you have an unbearable headache. Then you say, "no, it's ok, come on, do smoke...."
>
> Female, social smoker, social sciences, group 1

> When someone asks you, do you mind if I smoke? You don't think, well my health is telling me you shouldn't smoke... On the contrary, it is about politeness, about values. At this moment you have to say to yourself: "I ought to be permissive, I ought to be tolerant. Poor him! Let him have a cigarette, he is longing for it." Then you don't even consider to say no.
>
> Male, non-smoker, social sciences, group 1

> You cannot say no. Because then you look like the bad guy of the film. Then you say, "ok, but please don't blow the smoke into my face...."
>
> Female, non-smoker, science, group 6

The data presented above, suggest that non-smokers do not feel empowered to ask smokers not to smoke, because they fear confrontation and being judged as intolerant. Even though they might be bothered by the smoke and they would like their colleagues to refrain from smoking in front of them, they would rather not say

anything. Previous research has documented a lack of assertiveness, defined as "willingness to ask smokers to refrain from smoking", on the part of non-smokers (Poland, 2000). A survey carried out in Toronto reported that 52 per cent of never smokers and 40 per cent of former smokers said that they would find it difficult to ask someone not to smoke in a non-smoking area (Poland *et al.*, 1999). The qualitative data of this study suggest that the situation might be similar in the University of Navarre. One of the participants suggested that non-smokers should be encouraged to be verbally assertive when confronted with passive smoking:

> I think it would be very useful to have a campaign towards non-smokers, saying "Say no. I do mind if you smoke," because smokers might ignore a sign, but if someone comes and tells them "excuse me, could you put out your cigarette?" Then they will put it out "yes, yes, I am sorry".
>
> Male, non-smoker, science, group2

Previous research suggests that whether ETS is perceived as bothersome and harmful determines assertiveness among non-smokers (Willemsen and de Vries, 1996). Data from the questionnaire suggest that although the majority (79.2 per cent) of non-smokers agree that working in a smoky environment increases the chances of getting cancer, 20.8 per cent were unsure/disagreed with the statement. Non-smokers need to know more about the degree and the nature of the risks associated with passive smoking. University health educational programmes should focus on increasing awareness of the harmfulness of regular exposure to ETS at work. Non-smokers' assertiveness can help to enforce smoking restrictions and change social norms.

Focus group participants perceived that smokers are currently asking for permission to smoke in front of them more often than before. However, this question was qualified as hypocritical by some of them, because sometimes smokers ask for permission when they are already lighting the cigarette, and they do not seem to expect "no" for an answer.

> I think it is becoming more frequent. I mean, before, people took for granted that you would also be a smoker. I think that now there are many smokers who ask, even though they do it while they are already lighting the cigarette...
>
> Male, Non-smoker, social science, group 5

> Dialogue in Focus 6, science site.
> - Female 1 (non-smoker): I think they are asking for permission more often. But you don't normally say anything.
> - Female 2 (non-smoker): But they ask, expecting you to say that you don't mind.
> - Female 3 (ex-smoker): To keep their consciences quiet. "I am smoking with your consent." But you don't really say anything just to avoid to being given a bad time
> - Female 1 (non-smoker): I think they ask it thinking: "well, after all, she is not going to say anything."

Non-smokers seem to believe that once you have given a smoker permission to smoke a cigarette, it means that they are allowed to smoke as many as they like. In the words of two participants:

> Once you have said to a smoker that you don't mind him smoking, it means that you will never mind. They keep your word for ever. I didn't used to have problems with the person next to my desk. But once, I said that I didn't mind if he smoked, then of course, he didn't ask every time he smoked. He took it for granted that I had lifted the ban so he could do whatever he wanted.
>
> Male, non-smoker, social sciences, group 5

> I see there is an absolute lack of sensitivity. Once you say that you don't mind if they smoke, then there is no measurement about the quantity of smoke or how many cigarettes are irritating.
>
> Male, non-smoker, social sciences, group 5

This data highlights the weakness of the tobacco industry's "common courtesy" argument, especially in an environment such as the workplace, where relationships with co-workers make it difficult to ask people not to smoke. Although no one would oppose the use of common courtesy, a policy regulating the areas where smokers are allowed to smoke would be the only effective strategy to eliminate passive smoking.

Results from the PM measurements indicate that employees are exposed to high levels of contamination in the University cafeterias and vestibules/corridors. According to the questionnaire results, 40.1 per cent of the employees share offices with at least one smoker, and 26.1 per cent are exposed to ETS for more than one hour per day. However, almost 30 per cent of the respondents said that they are never bothered by the smoke in the University, and 46 per cent said that smoke bothers them only sometimes. The question is why some non-smokers are not bothered by smoke, even though results suggest that they are exposed to high levels of contamination. Looking at the focus group transcriptions, one might find potential answers. In the following passages, participants state that they are not normally bothered by smoke:

> They [family members] have always smoked at home. Therefore smoke doesn't bother me unless it is excessive. A person can be smoking next to me and as long as he/she doesn't blow the smoke into my face, I don't mind.
>
> Female, non-smoker, science, focus 2

> I am a smoker. Well, right now I've been a month and a half without smoking, which means I am trying to quit. And to be honest, smoke doesn't normally bother me, sometimes I even like it. It would please me if someone would smoke right now. Of course it depends on the brand he is smoking... [laughs].
>
> Male, ex-smoker, science, group2

> Of course, in the cafeteria there is smoke and so on... but personally, I am not bothered. Also in the flat where I live we used to smoke, the three of us, and two of us quit at the same time. There is only one left, and it is not a problem. Well, I have smoked a lot and I am not bothered by smoke.
>
> Male, ex-smoker, science, group 2

> I quit smoking last January [...] I am not bothered by smoke. When I came to work here, I shared the office with someone who used to smoke a lot and she is still smoking, but she doesn't work here anymore. And well, I work in the cellar, which means that we have relatively small windows. But I don't mind.
>
> Female, ex-smoker, social sciences, group 8

It seems that some participants are so used to being surrounded by smoke that it does not bother them anymore. Previous studies have confirmed that a person exposed to ETS at home is less likely to perceive and be bothered by passive smoking (Thompson *et al.*, 1995). Lack of awareness of the risk of passive smoking can be another explanation for not being bothered by ETS. A third explanation of this attitude could be the relationship with the smoker. People tend to have a greater "tolerance" for the actions of family/ friends than for strangers. Relatives, friends are allowed to infringe on us to a greater extent before we feel imposed upon.

5.4.3. Smokers' behaviour in the presence of non-smokers

Smokers described how they govern their own smoking behaviour in public. Some of them, while acknowledging the potential annoyance that their smoke might cause, still believed in the etiquette of consideration:

> When I am in a meeting here or abroad, in a work-shop for instance, and I feel like having a cigarette, I ask permission, well, I apologise - I don't ask for permission - I apologise. I am lucky that I haven't experienced anyone leaving the room. I do it with care, with taste, with whatever, but I haven't turned anyone out. But if someone has to leave, he or she should go, [not me].
>
> Male, smoker, social sciences, group 3

> I smoke in my office because I previously asked. I don't ask for permission. One day I talked about it with my work mate and she said, "don't worry, I am not bothered at all". In fact, after I have smoked 4 cigarettes I am the first one to notice that there is lots of smoke and I stop, because otherwise this would look like an opium den. I stop and she never has to ask me, it never got to the point that she was bothered.
>
> Female, smoker, social sciences, group 3

> As soon as I arrive at work, I switch on the computer and take a cigarette. All at the same time, you see? But well, because there, most of us are smokers, I know no one is bothered.
>
> Male, smoker, social sciences, group 5

The reasons why smokers do not always ask for permission seem to be that: a) they were allowed to do it in the past and therefore they believe there is no need to ask each time; b) they believe they are able to judge for themselves when smoking is convenient or not; or c) they assume non-smokers would tell them whether they are bothered or not.

However, this reasoning can be challenged. Firstly, the fact that non-smokers allow smoking in a particular situation does not mean that it will always be welcome. Secondly, the addictive nature of cigarette smoking jeopardises smokers' ability to judge whether smoking is acceptable or not. Even if they can notice non-verbal cues suggesting that smoking is not welcomed, the physical need for nicotine might influence their decisions. And thirdly, as the results presented above suggest, the current social environment at the University does not provide sufficient resources or support for non-smokers to ask people not to smoke.

Some authors suggest that smoking is not a social problem, but rather that the growing anti-smoking movement is becoming one (The Economist, 1997). The results presented here suggest the opposite: that passive smoking is a silent social problem, and that non-smokers are affected by ETS at the workplace, but they cope with it because the current social norms hinder them from raising their voices.

5.5. SUMMARY

This chapter has tried to demonstrate that passive smoking constitutes a health, legal, and social threat at the University of Navarre. Results from the questionnaire and contamination measurements suggest that employees are exposed to high levels of ETS on a daily basis. The PM and benzene levels found in the cafeterias and some University corridors/vestibules clearly go beyond the maximum thresholds established by the legislation.

There seems to be a social climate that favours smoking at the University of Navarre. Focus group participants identified the practice of asking someone not to smoke as a mark of intolerance. Our data suggest that, when faced with passive smoking, non-smokers tend to avoid confrontation, even if they are bothered by ETS. There is a pressing need for an intervention that protects the health of the staff and the students, and also contributes to the creation of a social climate in which non-smokers' rights to say no are respected.

Chapter 6

Applying the transtheoretical model to a sample of smokers at the University of Navarre

6.1. INTRODUCTION

The social cognitive models described in chapter 2 provide a framework for the cognitive processes involved in behavioural decision-making. Behavioural decision making is considered to be a complex process, involving perception of risks, pros and cons of action, perception of control or self-efficacy, normative influences, and motivation. Addiction to nicotine, socio-economic and cultural factors are also a determining factors underlying smoking behaviour, and have been neglected by these models. This chapter explores all these variables in the sample under study in order to find out more about how to help smokers at the University of Navarre to change their behaviour.

6.2. A STUDY OF THE VARIABLES THAT INFLUENCE HEALTH BEHAVIOUR CHANGE

One of the purposes of the *Healthy University Project* was to provide smoking cessation assistance to help the smoker gain control and dominance over a life-threatening addiction. A common problem in previous efforts to impact upon the smoking population has been the failure to take into account the readiness of the individual smoker to change his/her behaviour. Most previous smoking-cessation programmes assumed that the smoker was ready to quit. The transtheoretical model acknowledges that smokers are not in a homogeneous state with respect to their readiness, and that increased success can be achieved if interventions are adjusted to individuals' stages of change.

The survey instrument was developed to determine the relationship between the early stages of change (precontemplation, contemplation, and preparation) and the other key constructs of the transtheoretical model (process of change, decisional balance, and self-efficacy). The relationship between stages of change and other variables involved in behaviour change, such as nicotine addiction and perception of risks, are also explored.

6.2.1. Smoking prevalence and socio-economic status

The percentage of current cigarette smokers found in this study, 26.3 per cent (CI 95% 22.3-30.6), was lower than expected. According to the latest Health Surveys, smoking prevalence in Spain is 35.7 per cent and 32.4 per cent in Navarre (Ministerio de Sanidad y Consumo, 1999a). Several reasons might explain the lower smoking prevalence found in this sample. The sample under study consisted of people with high levels of education, and lower smoking rates are normally found among this group (Departamento de Salud Gobierno de Navarra, 1999). Another explanation might be the response rate (71 per cent). As shown in chapter 4 (table 4.3.) telephone calls made to non-respondents suggest higher smoking prevalence among them (31.4

per cent), although these differences were not statistically significant, possibly due to the small number of non-respondents contacted via phone (n=51). Furthermore, the findings on smoking prevalence are based on self-reported data that was not confirmed by other sources or verified biochemically. Another potential source of bias is underreporting of smoking/cigarette consumption, leading to an underestimation of the smoking prevalence rate.

Smoking prevalence was not significantly different between genders. This might appear to be surprising as national and regional trends show a higher prevalence among men (Ministerio de Sanidad y Consumo, 1999a). Most probably, this is explained by the lack of data adjustment. Regional data on smoking and gender, show no significant differences between men and women of the same educational levels: 31 per cent of men with a university degree in Navarre smoked compared to 30 per cent of women (Departamento de Salud Gobierno de Navarra, 1999).

As shown in chapter 4 (table 4.4.) results from this study suggest that smoking prevalence at the University of Navarre was inversely related to the level of education. Employees in the lower education level group had a significantly higher smoking prevalence. This is consistent with previous studies suggesting that there is an established link between lower socio-economic groups and smoking prevalence which may also vary according to sex and birth cohort (Townsend *et al.*, 1994; Fernandez *et al.*, 2001; Kiefe *et al.*, 2001; Osler *et al.*, 2001; Regidor *et al.*, 2001). According to the Spanish National Health Survey, smoking is more prevalent among less educated men. However, the opposite happens in women: those who are more educated or in higher social class seem to smoke more (Ministerio de Sanidad y Consumo, 1999a).

6.2.2. Attitudes towards change

Two different tools were used to measure subjects' attitudes towards change: the stages of change and the contemplation ladder scale. Both scales have been previously shown to be successful in predicting smoking cessation (Abrams *et al.*, 1994).

Table 6.1 shows the distribution of smokers by stage of change in the University of Navarre. The left column presents the classification of the current smokers, who are in the early stages of change, while the column on the right adds information about the ex-smokers in the sample, who are in action or maintenance stage, depending on how long ago they quit smoking.

Table 6.1. Distribution of subjects by stages of change

	Current smokers		Ever smokers	
	n	(%)	n	(%)
Precontemplation	59	(59.6)	59	(34.9)
Contemplation	32	(32.3)	32	(18.9)
Preparation	8	(8.1)	8	(4.7)
Action	-	-	19	(11.2)
Maintenance	-	-	51	(30.2)
Totals	*99*	*(100)*	*169*	*(100)*

The distribution of current smokers was concentrated in the first two stages: 59.6 per cent were in precontemplation stage, as they were not considering quitting smoking, and 32.3 per cent were in contemplation stage, as they were seriously thinking about quitting in the next six months. Only 8.1 per cent were in preparation stage: ready to make an attempt at quitting in the following month. Adding the ex-smokers to the analysis, 11.2 per cent of the ever smoker employees were in action stage, as they had quit less than six months before, and 30.2 per cent were in maintenance stage.

These results are quite favourable in comparison with distributions observed in other European samples. In Switzerland, the distribution of current smokers by stages of change in a representative sample was found to be: 73 per cent in precontemplation, 22 per cent in contemplation, and 4 per cent in preparation (Etter *et al.,* 1997). A study in the Netherlands found percentages of 70 per cent, 23 per cent, and 7 per cent respectively (Muddle *et al.,* 1994 as cited in Etter *et al.,* 1997). In Spain, one study revealed a distribution of 68 per cent, 25 per cent, and 7 per cent (Becona *et al.*, 1992). Smokers in American samples are typically distributed around 40 per cent in precontemplation, 40 per cent in contemplation, and 20 per cent in preparation respectively (Fava *et al.*, 1995). The differences found between these studies and participants in the University of Navarre might be largely attributable to the different age structures of the groups. Respondents in this study are younger than the general

population, and predictably with higher education levels than participants in a population survey.

Only two studies have been found measuring stages of change in a university setting. One of them, carried out in Geneva with university students and employees, found that 72 per cent of them were at precontemplation stage, 20 per cent at contemplation, and 8 per cent at preparation (Etter *et al.*, 1997). The other one, carried out in the USA, found more favourable figures: university staff were similarly distributed in the three stages of change with proportions of 37 per cent, 32 per cent and 31 per cent respectively (Robinson, 1996). The differences between countries might be explained by the smoking prevalence across the population. The university in Switzerland had a smoking prevalence of 29.0 per cent, this study found a 25.7 per cent prevalence, and the study in the USA only 14.5 per cent. The international comparison carried our by Etter *et al.* (1997) indicated that a ten per cent higher smoking prevalence was associated with an increase of 23 per cent of current smokers in precontemplation. Whether this association is causal, and the direction of the possible causal link, still need to be tested.

The contemplation ladder was also used in this study to measure smokers' intentions to quit. This tool assesses a smoker's position towards quitting on a continuum, rather than as a categorical variable (Biener and Abrams, 1991). Distribution of smokers through the contemplation ladder was consistent with the one found with the stages of change model. The scale indicated that 16.8 per cent of the smokers had no thought of quitting, 27.7 per cent thought they needed to consider quitting some day, 16.8 per cent were starting to think about how to change their smoking patterns, and only 4 per cent were taking action to quit. The association between the stages of change and contemplation ladder scale was significant ($p<0.001$), with a Kendall's correlation coefficient of 0.6, indicating a moderate positive lineal relation between the two scores.

Table 6.2. shows the average contemplation ladder score among smokers in different stages of change. Means are compared across stages of change using analysis of variance and Tukey's HDS post-hoc test for significant ANOVAs.

Table 6.2. Average contemplation ladder scale scores of smokers by stages of change

	N	Mean ladder score	(SD)	One way ANOVA	Post-hoc Tukey's HSD p<0.05
Precontemplation	59	2.6	(2.3)		
Contemplation	32	6.9	(1.7)	F=46.46	PC<C,PR
Preparation	8	6.6	(1.9)	p<0.001	

These results are similar to previous studies that have proved that the majority of smokers are not ready to quit (Biener and Abrams, 1991). Post-hoc test revealed that smokers in the precontemplation stage had a significantly lower ladder score than those in the contemplation or the preparation stages.

Results from the stages of change model and the contemplation ladder indicate that smoking prevention interventions at the University of Navarre should focus explicitly on the transitions from precontemplation to contemplation, and from contemplation to preparation. Some attention should be given to smoking intervention programmes that focus on the transition from preparation to action, even though probably fewer than ten per cent of the smokers may be receptive to these interventions.

Smokers on this study had an average history of smoking of 19.6 years (11.8 SD). This is important in terms of smoking cessation assistance as lifelong smokers find it more difficult to quit and are less likely to succeed (Khuder *et al.*, 1999).

6.2.3. Processes of Change

As explained in chapter 3, Prochaska *et al.* (1983) have identified ten processes that individuals engage in when they attempt to modify problem behaviour. They are classified into two groups: experimental and behavioural processes.

Experimental processing involves both thoughts and emotions about the consequences of not making the behaviour change. The five experiential processes of change are: consciousness raising (i.e. to think about information from articles and advertisements about how to stop smoking), environmental reevaluation (i.e. to

consider the view that smoking can be harmful to the environment), self-reevaluation (i.e. to be disappointed by their own need for cigarettes), social liberation (i.e. to notice that non-smokers are asserting their rights), and dramatic relief (i.e. to react emotionally to warnings about smoking cigarettes).

Behavioural processes represent the more action-oriented activities that people perform as they prepare to change behaviour. The five behavioural processes of change are: counterconditioning (i.e. to think about something else when tempted to smoke), helping relationships (i.e. to have someone who listens when they need to talk about their smoking), reinforcement management (i.e. to be rewarded by others if they don't smoke), self-liberation (i.e. to tell themselves that if they try hard enough, they can keep from smoking), and stimulus control (i.e. to remove things from their home or place of work that remind them of smoking).

The purpose of using this scale was to determine the relationship between the early stages of change (precontemplation, contemplation and preparation) and the processes of change in the sample under study. As explained in the methods section, a 20-item inventory was used. Individuals had to rate on a five point scale (from 5= Repeatedly to 1= Never) the frequency with which they had experienced these events during the previous month. Two statements were presented for each process, so scores for each process could range from two to ten.

Figure 6.1 shows the mean score of experimental and behavioural processes by stages of change.

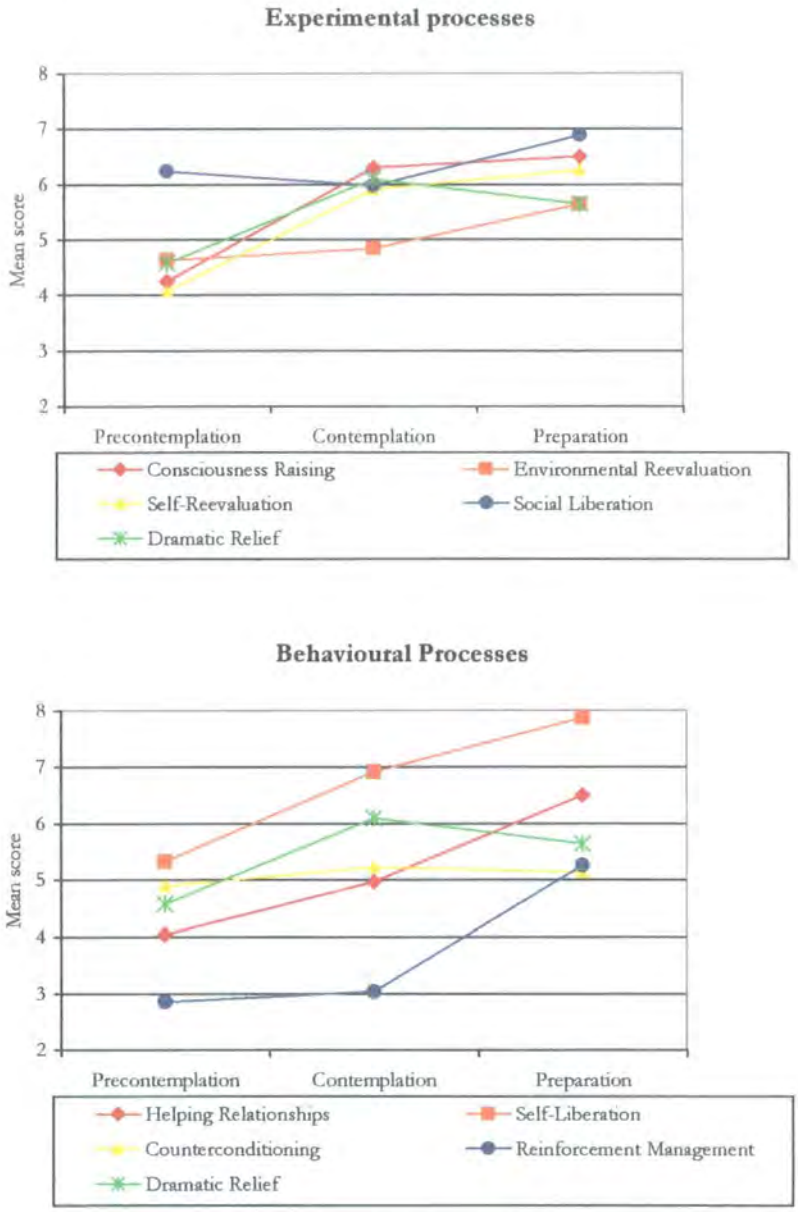


Figure 6.1. Processes of change used by smokers at early stages of change

Previous research has indicated that subjects in precontemplation make least use of processes, that those in preparation use them most, while subjects in contemplation are intermediate in their use of processes of change (Fava *et al.*, 1995). Similar patterns were found among the sample of smokers surveyed at the University of Navarre. Precontemplators used less frequently all the processes of change, except social liberation.

Table 6.3. displays the mean scores and standard deviations of the experimental and behavioural processes used by smokers at different stages of change.

Table 6.3. Mean scores of experimental and behavioural processes used by smokers at early stages of change

Process of change	Precontem-plation (n=59) Mean(SD)	Contemplation (n=32) Mean(SD)	Preparation (n=8) Mean(SD)	ANOVA	Post-hoc Tukey HSD p<0.05
Experimental processes					
Consciousness Raising (Items 4+11)	4.3(1.3)	6.3(1.7)	6.5(1.7)	p<0.001	PC<C,PR
Environmental Reevaluation (Items 6+12)	4.6(1.9)	4.9(1.9)	5.6(2.1)	p=0.378	-
Self-Reevaluation (Items 8+15)	4.1(1.9)	5.9(2.4)	6.3(3.2)	p<0.001	PC<C,PR
Social Liberation (Items 3 +14)	6.2(1.9)	6.0(2.0)	6.9(1.8)	p=0.493	-
Dramatic Relief (Items 7+18)	4.6(1.8)	6.0(2.2)	5.6(1.9)	p=0.002	PC<C
Behavioural processes					
Helping Relationships (Items 10+16)	4.0(2.3)	5.0(2.5)	6.5(2.7)	p=0.002	PC<C,PR
Self-Liberation (Items 2+13)	5.3(2.0)	6.9(1.4)	7.9(2.1)	p<0.001	PC,C<PR
Counterconditioning (Items 1+17)	4.9(1.5)	5.2(1.3)	5.2(1.5)	p=0.557	-
Reinforcement Management (Items 5+20)	2.8(1.7)	3.0(1.5)	5.3(2.7)	p=0.020	PC,C<PR
Stimulus Control (Items 9+19)	2.4(0.9)	3.2(1.4)	3.8(1.4)	p=0.001	PC<C,PR

Significant stage differences were found in seven out of the ten variables involved. Post hoc test revealed that precontemplators used consciousness raising, self-reevaluation, dramatic relief, helping relationships and stimulus control the least; while preparators used self-liberation and reinforcement management the most. These results are consistent with the ones found by Fava *et al.*(1995) in a representative sample of smokers. Individuals in earlier stages seem to use processes less than individuals in later stages.

Correlation coefficients of the processes of change are displayed in table 6.4. Seven out of the ten processes significantly correlated to the stages, with consciousness raising having the largest correlation. Consciousness raising shows efforts made by the individual to seek new information and to gain understanding and feed-back about the problem.

Table 6.4. Pearson correlation coefficient matrix for stages of change and processes of change variables.

	1	2	3	4	5	6	7	8	9	10	11
1. Stages of change	1.0										
2. Consciousness Raising	**0.6	1.0									
3. Environmental Reevaluation	0.1	** 0.4	1.0								
4. Self-Reevaluation	**0.4	** 0.7	** 0.4	1.0							
5. Social Liberation	0.0	** 0.3	** 0.3	** 0.3	1.0						
6. Dramatic Relief	**0.3	** 0.6	** 0.4	** 0.7	0.2	1.0					
7. Helping Relationships	*0.3	** 0.3	* 0.3	0.2	0.2	0.2	1.0				
8. Self-Liberation	**0.4	** 0.4	** 0.3	** 0.4	0.1	** 0.4	** 0.3	1.0			
9. Counter-conditioning	0.1	* 0.2	0.2	** 0.3	0.1	** 0.3	0.2	** 0.4	1.0		
10. Reinforcement Management	*0.3	* 0.3	** 0.3	** 0.3	0.1	* 0.2	0.4	** 0.3	0.2	1.0	
11. Stimulus Control	**0.4	** 0.5	** 0.4	** 0.5	0.1	** 0.6	* 0.3	** 0.5	** 0.3	** 0.4	1.0

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

The implication of these findings is that efforts to help smokers to move towards change at the University of Navarre should focus on the process of consciousness raising. Prochaska *et al.* (1985) explain that individuals tend to avoid threatening information about themselves or the environment. These defensive processes can prevent smokers from being able to change effectively without the help of consciousness raising from an outside party. Health education campaigns and available self-help material about the risks of smoking and the process of quitting might be the most influential interventions.

6.2.4. Decisional balance

Decisional balance is another component of the transtheoretical model. Velicer *et al.* (1985) developed two scales to study decision-making processes in smoking cessation. The scales (see complete scales in chapter 3) represent the *pros* and *cons* of smoking, combined to form a decisional "balance sheet" of comparative potential

gains and losses. The hypothesis is that the balance between the pros and cons varies depending on which stage of change the individual is in.

Tests of significance were performed to determine if differences existed between stages of change groups in either of the two scales. One-way ANOVA was not significant for the Pros scale, but it was for the Cons scale. Table 6.5. displays the mean and standard deviation for each group. The Cons scale score rises for contemplators and preparators, suggesting that the cons of smoking are taken into account in the later stages of change.

Table 6.5. Decisional Balance score by stages of change

	Precontemplation (n=59)	Contemplation (n=32)	Preparation (n=8)	One way ANOVA	Post-hoc Tukey HSD
	Mean(SD)	Mean(SD)	Mean(SD)		p<0.05
Pros	6.9(2.3)	7.6(2.7)	8.0(3.3)	p=0.292	-
Cons	6.8(2.0)	8.3(2.7)	8.3(2.6)	p=0.007	PC<C

It seems that smokers place a different amount of importance on the pros and cons of the habit as they progress through the stages of change. Post-hoc tests revealed that smokers in the contemplation stage weighted significantly higher the cons of smoking compared to those in the precontemplation stage. Score differences on the pros of smoking were not statistically significant.

These results suggest that smokers who are contemplating quitting in this sample no longer deny the negative aspects of their smoking behaviour. Precontemplators seem to view the pros of smoking as being as relevant as the cons. As the majority of the University employees who smoke are in precontemplation stage, education about the cons of smoking could be useful in turning the balance towards the potential gains of quitting.

6.2.5. Self-efficacy

The situational temptation inventory is based on the concept of self-efficacy developed by Bandura (1997). The purpose of the inventory is to assess how tempted people are to engage in problem behaviour in a certain situation. Once tempting situations have been identified, efforts should be concentrated on increasing individuals' self-efficacy by giving them adequate incentives and skills to confront those situations.

The situational temptation scale presents nine situations that lead some people to smoke. Participants had to rate how tempted they might be to smoke in each situation, using a five point Likert Scale from 5 = "Extremely tempted" to 1 = "Not at all tempted". The scale presents three situations that represent positive affect social circumstances, such as being with friends in a party; three negative affect circumstances, such as being stressed or tense, and three that represent habitual situations where people might have cravings to smoke (see complete scale in chapter 3). Each of the three categories could have a maximum score of 15 and a minimum of 3.

As can be observed in table 6.6., individuals in all stages thought they would be more tempted to smoke, or in other words, they would be less confident about their ability not to smoke, in positive affect social situations. Significant differences were found between stages in negative and habitual situations, with those in the contemplation and stages rating significantly higher than precontemplators.

Table 6.6. Self-efficacy and situational temptations scores by stages of change

	Precontem-plation (n=59) Mean(SD)	Contemplation (n=32) Mean(SD)	Preparation (n=8) Mean(SD)	One way ANOVA	Post-hoc Tukey HSD p<0.05
Positive affect social situations	11.3 (2.3)	12.3 (2.1)	12.3 (1.7)	p=0.136	-
Negative affect situations	9.2 (3.1)	11.4 (2.2)	10.5 (3.6)	p=0.003	PC<C
Habitual situations	7.1 (2.9)	9.0 (3.1)	8.8 (2.1)	p=0.009	PC<C

Participants in this study seemed to think that they would have more difficulties resisting the temptation to smoke in situations related to positive affect social situations such as being with friends at a party, or having a coffee and relaxing. Health promotion messages and activities planned to help smokers in the University to quit should include strategies to increase self-efficacy, especially in positive social circumstances.

The questionnaire included another statement to measure self-efficacy among smokers. Most of the smokers (40.6 per cent) seem to have low confidence in quitting smoking once the restrictions are in place, 38.5 per cent had medium, and 20.8 per cent had strong confidence. Confidence in stopping was not significantly different among smokers in precontemplation, contemplation, or preparation stages (chi square p=0.15).

6.2.6. Perception of risk and severity of the consequences of smoking

The concept of risk, presented in most of the social cognitive models, has been found to be to determinant in health behaviour. Some studies report that smokers overestimate the health risks of the behaviour (Viscusi, 1990), while others suggest the opposite (Schoenbaum, 1997; Romer and Jamieson, 2001). The explanation of this controversy is that smokers are often optimistic about their personal smoking-related risk, despite their awareness of the objective risks to others. Weinstein (1998) suggests that although smokers acknowledge the risk, they minimise it and show a clear tendency to believe that the risk applies more to other smokers than to themselves.

Results from the focus group in this study suggest that some smokers do not perceive smoking to be as dangerous as do those who have already quit the habit. Ex-smokers and non-smokers seem to have a clear idea about the risks associated with the habit. For example:

> I have never smoked and I hope I will never do. For me is very clear: smoking damages the health of the smoker and the others around. I shouldn't have to cope with other people damaging my health.
>
> Male, non-smoker, social sciences, group 8

Conversely, some of the smoker participants in the focus group identified other lifestyle risks to be more dangerous than smoking:

> There are many other annoying things apart from smoke, and nobody is complaining about them. Stress and other thousands of things also affect health and nobody is obsessed about it.
>
> Female, smoker, social sciences, group 3

> From the business point of view, it is clear, that for instance, alcoholism affects working efficiency. However, smoking doesn't. I mean, this is just a comment, smoking damages your health but does not obstruct your work.
>
> Female, smoker, social sciences, group 3

It seems that some smokers tried to justify their addiction by identifying other health risks that could be tackled. However, one can challenge these arguments. Smoking does affect working efficiency. Research shows that absenteeism is higher among smokers compared to non-smokers (Parrott *et al.*, 2000) and that working in a smoky environment produces poor job performance with relation to such factors as elevated carbon monoxide levels, eye irritation, and sickness while on the job (Frankish *et al.*, 1997). Another participant highlighted the problem of car pollution as being more dangerous than smoking:

> But cars are worse [than cigarettes]. The law also says that gas emissions are not good. Then what we could do is to decide that there should be no cars on the campus [...] Let's close the campus and then there are no cars and therefore we don't fill the natural space with carbon hydroxide or whatever it is...
>
> Male, smoker, science, group 7

The argument that cars also pollute seems to be used very often by smokers in order to defend their habit. There is no doubt that contamination outdoors is a problem, but it is a different one from the one being discussed. As one of the focus group participants said:

> "Cars pollute more, ok, but I don't have my neighbour's car in my living room!"
>
> Male, non-smoker, science, group 7

The public health implications air pollution are not as great as the effects of smoking on health. It has been estimated that in the US second-hand smoke causes about 3,000 lung cancer deaths a year, compared to less than 100 lung cancer deaths per year from traditional forms of outdoor air pollution (WHO, 2003a).

Some of the respondents were not clear about the risks associated with active smoking as one participant said:

> I would like to know if we have data about how many of the university employees are supposed to be killing ourselves, smokers and non-smokers, who have a lung cancer or whatever is caused by tobacco, and how many are because of the heart? Because probably there are more passing away because of the heart. I have the impression that stress is more dangerous than tobacco.
>
> Male, smoker, science, group 7

Why would university employees with a predictably high level of education present this lack of awareness about the risks of smoking? One explanation for this phenomenon is what Festinger (1964) called cognitive dissonance. This theory describes a state of mental discomfort that acts as a motivator to reject or accept new information. Individuals hold, and actively consider, opposing beliefs about smoking. According to cognitive dissonance theory this aversive state motivates smokers to find other issues that are worse than smoking to reduce the discomfort.

Secondly, in those arguments one can also recognise the success of the strategy followed by the tobacco industry. There is substantial evidence that the industry has used the mass media to mislead the public and to keep the social debate away from the real solutions to the problem (Mangurian and Bero, 2000; Drope and Chapman, 2001; Neuman *et al.*, 2002).

Thirdly, although cigarette smoking is firmly established in the public consciousness as cause of cancer, smokers seem to underestimate their own risk. Part of this confusion has been explained by the long delay, three to four decades, between the peak in smoking prevalence and the subsequent peak in smoking-related mortality (Lopez *et al.*, 1994).

These results suggest that health education campaigns at the University of Navarre should try to overcome the tendency of smokers to underestimate the risks of their own smoking, and educate them about the falseness of certain widespread perceptions.

6.2.7. Social norms

As explained in the first section of this chapter, perceived social norms have an important role in the decision of changing behaviour. The transtheoretical model incorporates this variable in both the processes of change and decisional balance inventories.

Two other separate questions were included in the questionnaire to evaluate the perceived normative influences. Smokers were asked about their perceptions of social acceptance of smoking at work. On a Likert scale from 1= strongly disagree, to 5= strongly agree, smokers were asked their opinions on the statement "smoking at work has become socially unacceptable." 43.4 per cent agree with the statement, and 25.3 per cent of the smokers were not sure whether smoking was socially unacceptable or not. Comparisons by stages of change were not statistically

significant. Smokers in all stages of change have similar mean scores (ANOVA F=0.378; p=0.687).

On average, it can be suggested that smokers feel that their habit is becoming less sociable acceptable, but there are still 31.3 per cent of smokers who do not think so. A new non-smoking policy at the University of Navarre could help to change these attitudes, favouring behaviour change.

Smokers were also asked whether their colleagues have encouraged them to stop smoking. More than half of them (56.6 per cent) have been encouraged to stop smoking by at least one of their workmates. Table 6.7. shows that being encouraged by a work colleague to stop was statistically related to stages of change. Smokers in contemplation and preparation stages were more likely than those in precontemplation stages to have received advice to stop from their colleagues.

Table 6.7. Proportions of employees who have been encouraged to quit smoking by colleagues and stages of change

	Precontemplation	Contemplation	Preparation	Pearson χ^2
	n (%)	n (%)	n (%)	
No one at work has encouraged me to quit	32 (54.2)	7 (22.6)	3 (37.5)	p=0.015
One or more colleagues have encouraged me to quit	27 (45.8)	24 (77.4)	5 (62.5)	
Total	*59 (100)*	*31 (100)*	*8 (100)*	

These results suggest that employees at the University of Navarre could facilitate behavioural change by encouraging those colleagues who smoke to stop the habit. A health education campaign should also be targeted to non-smoker and ex-smoker employees, providing information to all workers on the benefits of quitting and how to support colleagues.

6.2.8. Nicotine dependency

Tobacco smoking is no longer regarded as just a habit. The WHO classifies it as a drug addiction (WHO, 1992), as nicotine has been shown to have effects on brain dopamine systems similar to those drugs such as heroin or cocaine (USDHHS, 1989). The withdrawal symptoms of this drug are an important factor underlying the failure of many cessation attempts. The FTND, a scale that measures strength of addiction, was used in this study to determine the levels of dependence among smokers at the University of Navarre.

As explained in chapter 3, this scale has a maximum score of ten, and classifies smokers in three groups according to their degree of nicotine dependence (Fagerström *et al.*, 1996). Smokers in this sample had an average score of 2.5 (SD 2.4); 73.6 per cent of them had minimum physical dependence on nicotine, 23.1 per cent had moderate, and only 3.3 per cent scored maximum dependence. Previous studies using the FTND have shown that men consistently score higher on dependence than women (Fagerström *et al.*, 1996). In this sample, differences were not statistically significant. Mean score among men was 2.9 (SD 2.7) and 2.1 (SD 2.1) among women (Independent samples T test; p=0.291).

FTND scores in this study are similar to the ones found in other Spanish samples (Becona *et al.*, 1992; Jimenez-Ruiz *et al.*, 2001). Only a small percentage of the current smokers seem to have high levels of nicotine dependence. Population-based studies carried out in other European countries have found higher scores in the Fagerström test. A report comparing nicotine dependence between Austria, Denmark, Finland, France, Poland, and the United States (Fagerström *et al.*, 1996) found mean FTND scores ranging from 3.1 to 4.3. The authors argue that the degree of nicotine dependence correlates negatively with smoking prevalence. Mediterranean countries, such as Spain or Greece, are still at a third stage of the smoking epidemic with higher prevalence rates, and this might explain the lower levels of nicotine dependence found. In countries such as the US, Canada or the North of Europe, where a great deal of effort has been taken to reduce active and passive smoking, only those who are highly addicted to nicotine remain smokers. Fagerström *et al.* (1996) describe this

phenomenon as "selective quitting": smoking cessation occurs mostly among smokers with low dependence, leaving the more highly dependent ones in the population still smoking.

However, it could also be argued that people in those countries might a have lower score, not because they are less physically dependent on nicotine, but because they encounter far fewer situations where they cannot smoke. Smokers in Mediterranean countries are therefore more likely to score one point less on the test due to question 2: "Do you find it difficult to refrain from smoking in places where it is forbidden (e.g., in church, in a library or in a movie theatre)?".

To investigate the potential relationship between nicotine dependence and readiness to quit smoking, average scores of the FTND for each stage of change were compared. The association between nicotine dependence and stages of change was significant (p=0.026), but the Kendall's correlation coefficient was 0.2, showing a weak positive lineal relation between the two scales.

Table 6.8 presents FTND mean scores by stages of change. Significantly lower levels of nicotine dependence were found among those who are in the precontemplation stage compared to those in contemplation.

Table 6.8. The Fagerström Test for Nicotine Dependence (FTND) by stages of change

	Precontemplation (n=59) Mean (SD)	Contemplation (n=32) Mean (SD)	Preparation (n=8) Mean (SD)	One way ANOVA	Post-hoc Tukey HSD at 0.05 level
FTND Score	1.7 (2.2)	3.4 (2.4)	3.0 (2.6)	p=0.009	PC<C

These results seem contradictory if compared to other studies that suggest FTND scores are higher in the precontemplation stage (Rohren *et al.*, 1994; Prokhorov *et al.*, 2001). Several reasons might explain these contradictory findings. On the one hand, the differences found might be largely attributable to the different characteristics of the population under study. Prokholov and colleagues studied a representative sample of adolescents, while Rohren and colleagues surveyed patients who voluntary attended smoking cessation services.

On the other hand, it can be argued that higher nicotine dependence could be a cause for wanting to stop the habit. In this case, results of this study would be explained by the hypothesis that those who have higher dependence smoke more, and might be more aware of their problem and therefore more likely to be in a contemplation stage or preparation stage. Nevertheless, more research is needed to further clarify the nature of the association between nicotine dependence and stages of change.

6.3. IMPLICATIONS FOR PRACTICE: SMOKING CESSATION STRATEGY

6.3.1. The need for smoking cessation assistance

The goal of non-smoking policies is to provide a safe and healthy workplace for all employees. Unfortunately, the message of "smoke-free" is sometimes misinterpreted to mean "smoker-free" or "anti-smoker" (USDHHS *et al.*, 1996). Non-smoking policies should go hand in hand with support for employees who smoke. Helping workers who want to quit sends a clear message: the University cares about all the employees, including smokers.

Previous research suggests that many employees in a workplace (up to 12 per cent) use the introduction of a non-smoking policy as an incentive to stop smoking (Brenner and Fleischle, 1994; Eriksen and Gottlieb, 1998; Willemsen *et al.*, 1999). This suggests that it is important to offer smoking cessation assistance and implement restrictions simultaneously.

In this study, questionnaire respondents were asked about how useful smoking cessation programmes at the University would be. There were no significant differences among smokers and non-smokers on this matter (chi square test (2 sided) p=0.185). Most of them thought this initiative would be useful/ very useful (smokers 82.5 per cent; non-smokers 89.6 per cent).

Most of the employees at the University of Navarre (around 85 per cent) receive their medical assistance at the University Clinic. At the time this study took place, the University Clinic did not offer a structured smoking-cessation programme, and advice and support on cessation were left to the voluntary practice of the doctors and nurses working in the different departments. During the focus group interviews, both smokers and non-smokers talked about how useful it would be to have smoking cessation assistance at the University and/or at the University Clinic. Some participants for example said:

> We have gone from being obliged to smoke [by peer pressure] to it being banned. I don't know about you, but in my time, either you smoked or you had to leave the group. It was like this. So now resources are needed [...] For the last 5 years at the annual check-up, the prescription is: "you should quit smoking." They don't prescribe you aspirin or vitamins..."you should quit smoking". Where shall I buy this medicine? We don't have a place to go [...] We want to quit , but of course, it is a big mentality change. It is like the use of computers. When the use of computers was imposed at our work, I was the first one to ask for training. I was willing to write my own books, but I also asked for a person who would teach me how to use them. I mean, we are not against innovations, because this is an innovation, but we need help.
>
> Female, smoker, social sciences, group 3.

> We need to help the "poor smoker". A series of things should be done to help them to quit.
>
> Male, non-smoker, social sciences, group 1.

> It should be a committed help, with follow-up, with a specialist that can help them in every sense of the word. I have seen my friends, smoking a lot and then you tell them and they say, "yes I wish I could quit, but I have so many problems." They need a specialist.
>
> Female, non-smoker, science, group 4

> We need to find what can be done to help, I don't mind: patches whatever, but they need to release the stress.
>
> Female, non-smoker, science, group 7

The introduction of a smoke-free policy provides a context in which health education and promotion programmes can be offered to the University community. It is important that these programmes include workers' relatives, if they also smoke, to increase their effectiveness.

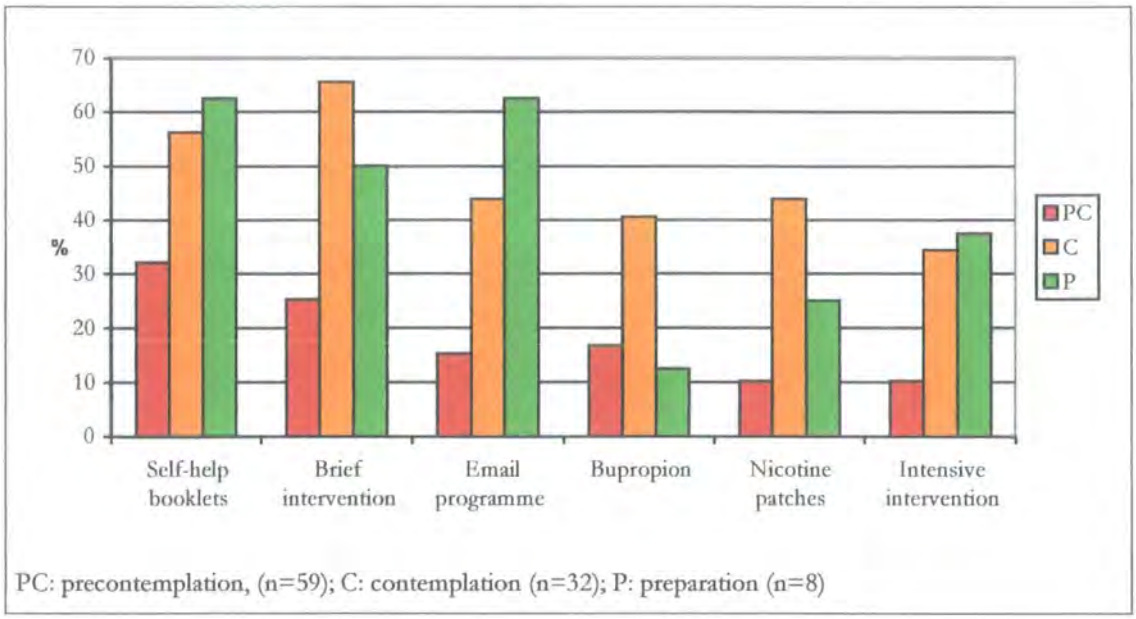
6.3.2. Smoking cessation adapted to the needs of the University

The questionnaire asked smokers about their preferences for cessation methods, in order to plan health promotion interventions based on the employees' needs. Self-help booklets to stop smoking (41.7 per cent), brief tobacco dependence intervention (38.8 per cent), and a quitting programme through e-mail (27.2 per cent) were the most selected options. Other less popular options were: information about bupropion (23.3 per cent), about nicotine patches (21.4 per cent), intensive smoking cessation intervention (20.4 per cent), talks on tobacco-related issues (11.7 per cent), stop smoking support groups (6.8 per cent) and stop smoking hot-line (4.9 per cent), whilst 15.5 per cent of the smokers declared not to be interested in any of those activities.

Extrapolating the stages of change results to the whole University population (n=1923), it could be estimated that around 294 (95% CI=243-342) employees are in the precontemplation stage, 160 (95% CI=115-210) in contemplation, and only 40 (95% CI=17-76) in the preparation stage. Provision of assistance to quit should be realistic and in accordance with the expectations of the number of smokers considering quitting.

Interest in smoking cessation activities varied according to the different stages of change. As can be seen in figure 6.2., precontemplators had, in general, low levels of interest in the different smoking cessation activities offered. Contemplators on the other hand, were very interested in having access to brief interventions and self-help

booklets. Those who were ready to change in the near future (preparators) appeared to be interested in e-mail programmes, self-help booklets, and also in intensive intervention.



PC: precontemplation, (n=59); C: contemplation (n=32); P: preparation (n=8)

Figure 6.2. Interest in smoking cessation activities by early stages of change

The findings of this study suggest that several health education programmes/ interventions could complement the smoke-free University policy. An intensive smoking cessation intervention offered to all smokers at the University could have a very high efficacy rate but very low recruitment rate, and therefore very little impact on smoking rates in the population. In contrast, an intervention that is less effective but has a very high recruitment rate could have a an important impact on the smoking rates in the population. Matching interventions with the smoking stage has been shown to be much more effective than smoking cessation programmes designed for smokers who are ready to stop (Rohren *et al.*, 1994).

Self-help materials should be available, especially for those in precontemplation. Because literature suggests that precontemplators do not normally seek information (Prochaska *et al.* 1997), self-help materials should be placed in a visible and accessible place, for example, at the entrances of the buildings and on the University webpage.

Stages of change theory suggests that materials, discussion of the risks versus benefits of tobacco use, and personalising risk are useful at this stage.

Brief and intensive intervention therapy and e-mail programmes to quit smoking should be offered to meet the needs of smokers in the contemplation and preparation stages. Computer-based smoking cessation interventions hold the promise of combining the benefits of high-reach media-based interventions, individually-oriented clinics, and popular self-help programmes (Etter and Perneger, 2001). Results from the FTND suggested that a subgroup of dependent smokers at the university may need to be given access to pharmacological aids to cessation. Information and referral sources for nicotine patches and bupropion should be available for smokers at preparation stage, especially for heavy smokers.

The transtheoretical model is a useful framework to identify where the largest proportion of the staff is situated in the process of change. Targeted interventions to accelerate movement through the stages of the of change can be adapted to the entire working population rather than to only those individuals who are ready o quit.

However the descriptive cross-sectional aspect of this study limits the applicability of its findings. The time from when smokers take their first step to being successful former smokers has been estimated to be as long as ten years (Pierce, 1998). Future evaluations need to reassess stages of change and the interventions should reflect changes in the population's readiness o change.

6.4. SUMMARY

The transtheoretical model of change can be used to design a smoking cessation intervention adapted to smokers' needs at the Universiy of Navarre. This chapter has explored motivation, pros and cons of quitting, self-efficacy, normative influences, and nicotine addiction in a representative sample of smokers at the University. Results suggest that the majority of smokers at the University were not considering quitting and would probably ignore interventions that disregard their current attitude

towards smoking. The interventions more likely to succeed among this group are health education campaigns about the risks associated with smoking and ETS.

Self-help materials and brief interventions could be used to increase self-efficacy among those smokers at contemplation stage. A new non-smoking policy could be the environmental cue that preparators need to move towards action. An environment where smoking is not sociably acceptable will also help to prevent quitters from relapsing.

Chapter 7

A non-smoking policy based on research evidence

7.1. INTRODUCTION

This chapter presents the data collected on employees' attitudes towards a future non-smoking policy at the University of Navarre. Employees' reasons to support or not support smoking restrictions are explored. Perceived advantages of having a non-smoking policy, and possible obstacles to the implementation process, identified during the focus group interviews, are discussed.

Focus group participants may not represent the views of all University employees. They may have volunteered because they had particular but unrepresentative views on certain issues. For example this might have led to an overestimation of foreseen problems when implementing the policy or vice versa. However this limitation does not invalidate the results presented in this chapter. The problems that might emerge when implementing policy are not necessarily caused by representative groups, and in the same way, more solutions and suggestions might be obtained by employees interested in the issue of smoking rather than by a sample representative of the whole population.

The final section of this chapter proposes a non-smoking policy based on the research evidence compiled in this project and therefore tailored to the needs of the University community.

7.2. ATTITUDES TOWARDS A FUTURE NON-SMOKING POLICY

7.2.1. Acceptance towards future restrictions

Results from the questionnaire sent to a random sample of employees suggest that an overwhelming majority of the respondents (82 per cent), irrespective of their smoking status, would support a more restrictive policy than the existing one at the time the study took place (smoking was prohibited in the libraries, laboratories, lecture rooms, and lifts). Acceptance among active smokers was significantly lower, but even so, almost 60 per cent were in favour.

Support for a future smoking restriction policy in the University is displayed in Table 7.1. Respondents were presented with four different options of future smoking restrictions.

Table 7.1. Attitudes about a more restrictive smoking policy at the university.

Attitudes	Total (n= 407) n (%)	Non-smokers (n=298) n (%)	Smokers (n=103) n (%)	Chi square
Accept a more restrictive policy	316 (81.7)	258 (89.3)	58 (59.2)	p<0.001
Option 1: Employees come to agreements about where and when smoking is allowed	123 (31.7)	68 (23.4)	55 (56.1)	
Option 2: Smoking should be prohibited in public places and corridors. Employees should not be allowed to smoke during conferences and other meetings	57 (14.7)	44 (15.2)	13 (13.3)	p=0.001
Option 3: Smoking should not be allowed anywhere in our workplace, except in designated smoking areas	182 (46.9)	152 (52.4)	30 (30.6)	
Option 4: Smoking should be prohibited on all university premises, without exceptions	26 (6.7)	26 (9.0)	0 (0.0)	

There were significant differences between smokers and non-smokers. Smokers seem to be more likely to accept lower restrictions ($p<0.001$). Only a few non-smokers favoured the "individual solution" approach, in which there is no non-smoking policy (option 1), while this was the option most selected by smokers. A policy restricting smoking in the University except in designated smoking areas (option 3) was on average the most favoured option. Acceptance of a total University ban on smoking was only selected by 6.7 per cent of the respondents, and according to these results only 9 per cent of non-smokers would support it.

Attitudes towards smoking regulations in this sample are similar to the ones found in other European countries. In Germany (Apel *et al.*, 1997), Switzerland (Etter JF *et al.*, 1999), and the Netherlands (Willemsen *et al.*, 1996) higher support has been found for restrictive policies with designated smoking areas than for a total smoking ban at the workplace. A social climate more favourable for a total ban on smoking at the workplace has been found in the US (Hocking *et al.*, 1991; Robinson, 1996) and also Australia (McAllister, 1995), where public support for banning smoking in the workplace ranged from 73 per cent to 79 per cent.

Another four statements were presented to respondents to measure attitudes towards the smoking policy and the implementation process. Responses to these items were on a 5-point Likert-type scale from strongly agree (5) to strongly disagree (1). Figure 7.1. presents agreement with each statement by smoking status.

The majority of non-smokers employees (71.6 per cent) would like the University to become smoke-free while a lower percentage of smokers (25.0 per cent) agreed with the statement. Most of the respondents thought that having a smoke-free university was a good idea, even half of the smokers agreed with this statement.

Smokers were more likely to agree that a smoke-free policy would be impossible to enforce and almost 40 per cent of non-smokers were uncertain about it. Both smokers and non-smokers seemed to perceive smoking prohibition as unfair to smokers, although on average smokers had higher scores on this item. The Mann

Whitney U test showed that all the score differences between smokers and non-smokers were statistically significant.

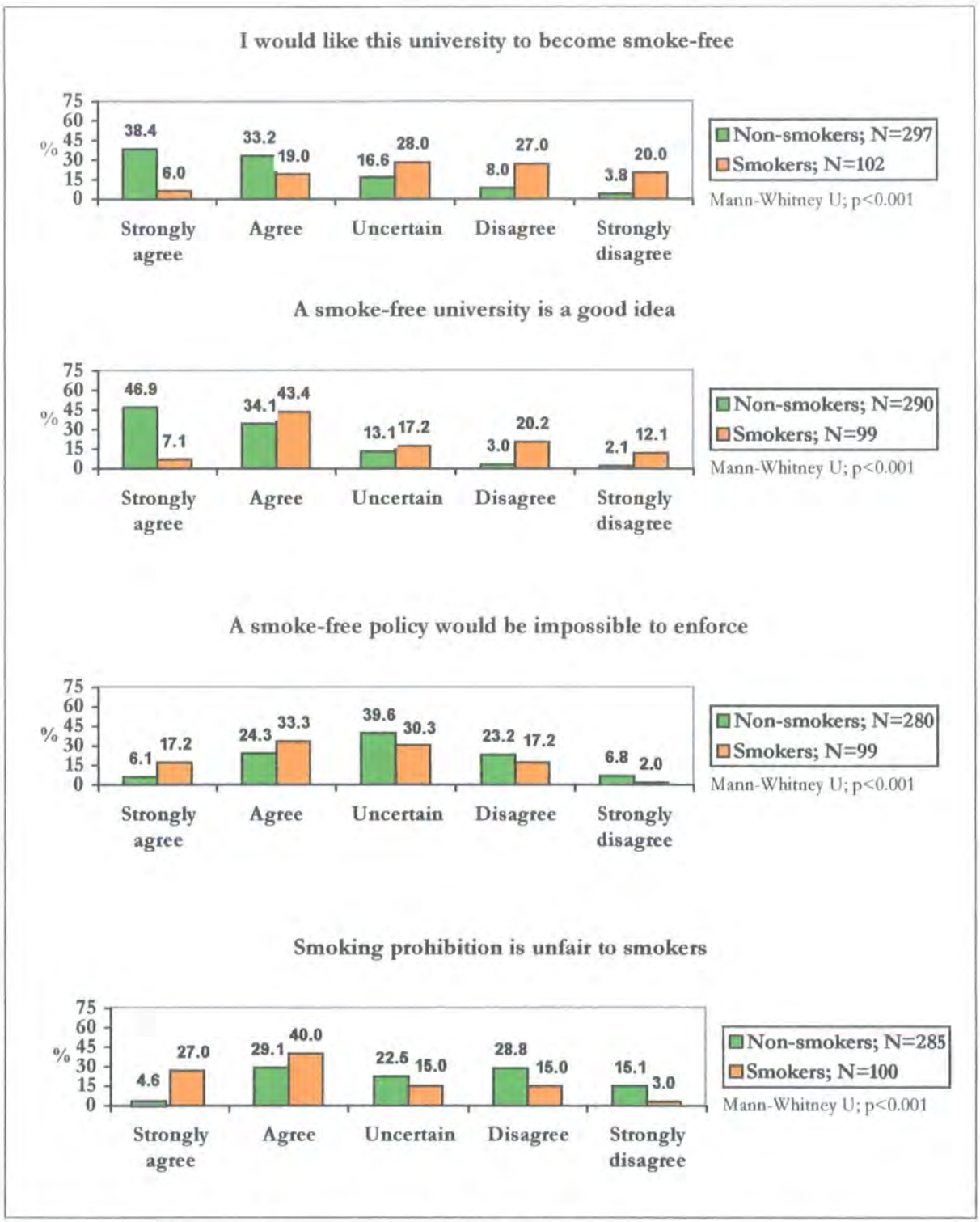


Figure 7.1. Attitudes towards the smoking policy and the implementation process by smoking status

Data from the questionnaire provides information from a representative sample of employees in the University and is useful to determine future acceptance in quantitative terms. On the other hand, data from the focus groups can be used to identify objections and suggestions for a future non-smoking policy at the University. Figure 7.2. illustrates the different reasons given by focus group participants to support or not to support a future non-smoking policy. These reasons are discussed below.

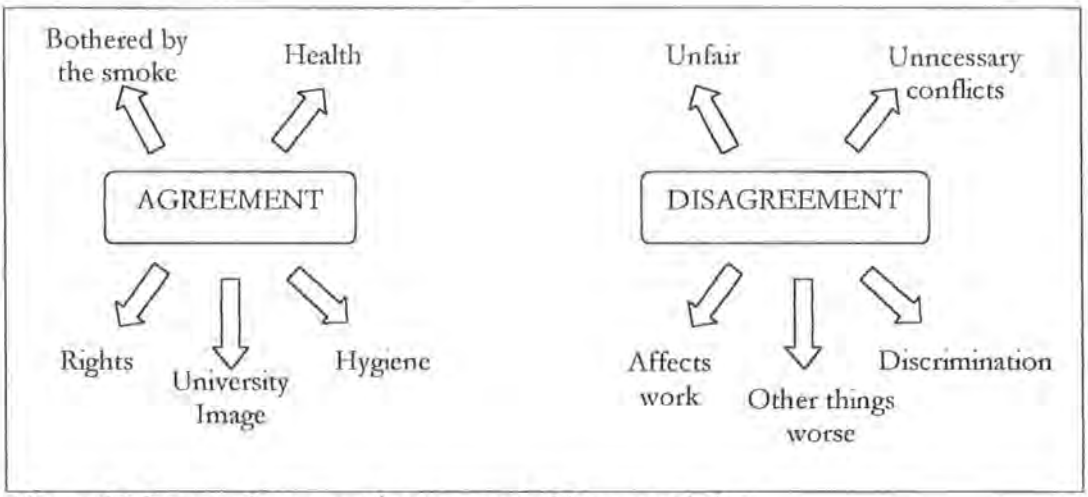


Figure 7.2. Reasons for support/non-support of future restrictions

7.2.1.1. Reasons to support a non-smoking policy at the University

Most of the focus group participants (83.3 per cent) were in favour of having a non-smoking policy at the University of Navarre. Agreement with future restrictions ranged from 57.1 per cent amongst smokers to 97.3 per cent amongst non-smokers. Those who were in favour complained about the current situation and claimed that something should be done. The main reasons given for that were: health reasons, hygienic reasons, they were bothered by passive smoke, they thought breathing clean air was their right, and they were worried about the image of the University. The following quotes from the transcripts illustrate these reasons:

> I think buildings are for living and not for dying. Therefore, buildings should be absolutely without smoke
>
> Male, non-smoker, science, group 7

> I cannot afford to spend 20 years of my life doing a job that is maybe leading me to cancer. It is not that it will lead me directly, but it will increase my chances, that's for sure. Therefore, for me it is clear, in a closed environment, in the buildings, smoking should be forbidden.
>
> Male, non-smoker, social sciences, group 8

> But the smoke is there and it affects you. It affects me and I haven't chosen it [...]. The problem is that tobacco damages non-smokers, we wouldn't be here otherwise. If we have to forbid it, I don't think it is a bad idea.
>
> Female, non-smoker, science, group 6

Health reasons are a strong argument to support a non-smoking policy, but not the only ones. Some focus group participants, while acknowledging the effects of passive smoking, suggested that hygienic reasons, such as the bad smell, make them support future restrictions:

> The toilets on the third floor, it is incredible. People, I don't know, spend three hours or don't smoke in their office or in the corridors... sometimes you get in there and there is a blast of unbearable smell. It gives you a breathless feeling.
>
> Female, non-smoker, science, group 7

> There are days when I arrive at work that I do "uffff" [she holds her breath]. It is not the smoke, it is the smell. It is inconceivable to me.
>
> Female, non-smoker, science, group 4

These comments support the evidence found when measuring ETS levels at different locations in the University. Other participants did not use health or hygienic arguments to support smoking restrictions. For them it was the annoyance and discomfort of working in a smoking environment which makes it unbearable. In the words of two interviewees:

> For me, in those common study rooms that we have, it [the smoke] bothers me. The other day I went in one of them. They were smoking and I had to leave. I cannot work in this environment, you open the door and you cannot even breathe. I start coughing. Then you have to close it [the door]. I couldn't work there I had to look for another place.... And then you say, "damn! why doesn't she [the smoker] leave?"
>
> Female, non-smoker, science, group 6

> I am a non-smoker and I share an office with five other people, and three of them smoke. The ones that are just in front of me and behind me. And they smoke eight hours a day. And I swallow all the smoke. I don't agree with people smoking at work. They should smoke less, but not at all at work. I agree they can smoke in the cafeteria and so on, I wouldn't forbid that, but not at work. I...sometimes I suffer, because I am swallowing smoke all the time.
>
> Female, non-smoker, science, group 6

Often the smoking debate is framed as a conflict of rights. Non-smokers insist on their right to breath smoke-free air. At the same time, smokers invoke their right to smoke. In some of the discussions, participants brought up the legal considerations of the problem. Some of them doubted the existence of non-smokers' rights. In the words of one smoker:

> Someone has talked before about the right to breathe pure air. I am not sure whether people have the right to breathe pure air, as a right...
>
> Male, smoker, science, group 4

However, the Spanish legislation is clear about smoking in public places. The Royal Decree 192/88, established that: "In case of conflict, the person's right to breath air without smoke will prevail over the person's right to consume tobacco." Those who were in favour of having a non-smoking policy seemed to be aware of the current law:

> The roots of the problem are two rights: the smokers' and the non-smokers' rights. Without any doubt, at least for me, the right of the person who doesn't smoke prevails over the smoker from the moment that it is damaging his health.
>
> Female, non-smoker, science, group 6

> I understand, being a smoker, that non-smoker rights should prevail. I agree about that.
>
> Female, smoker, science, group 7

Smoking policies are not about whether or not people smoke, but when and where they smoke, and whether their smoke affects others. As non-smoking groups maintain, smokers are free to smoke, but if they do so, they should do it in a setting where they are not infringing the freedom of others to avoid exposure to a health risk (ASH, 2001).

Finally, the fifth reason presented by participants to support future restrictions was the impact that smoking has on the University image. The University of Navarre is a leading centre of education in Spain, and health is one of their main lines of research; it seems inconsistent to try to promote health and well-being, and permit smoking in its premises at the same time. Some participants, for example, said:

> Really, what kind of image is the university projecting?....I am thinking about those entrances at the hall, when there is so much smoke, where ashtrays are overflowing... this image is terrible.
>
> Female, smoker, social sciences, group 1

> I think it is totally reprehensible, the image of the doctor that finishes his lecture and lights his cigarette right at the door of the lecture room. I think it is horrible, towards his own students and towards the rest of us that are breathing there. I think it is a third-world image.
>
> Male, non-smoker, science, group 7

> If a smoke-free university was achieved it would say a lot about this University, more about the people who have committed themselves not to smoke than the directives of the University.
>
> Male, non-smoker, science, group 2

7.2.1.2. Reasons to not support a non-smoking policy at the University

One sixth of the focus group participants did not agree that implementing a non-smoking policy was a good idea. Most of them (85 per cent) were smokers. The main reasons given against a non-smoking policy were: that it was an unfair measure, some thought it would create unnecessary conflicts, they felt discriminated against, and worried that the measures could affect their work. The following statements explain their arguments:

> My opinion about future restrictions: "no, in principle, no." It is not a personal matter, but I think it is unfair from the social point of view....There are a lot of people who enjoy the habit. It is a way of socialising... I think restricting smoking in public places is socially unfair. Maybe I could justify it better because I have studied political philosophy and I could back up my arguments but .... people can say whatever they want but please, leave me alone.
>
> Male, smoker, social sciences, group 3

> I think that if you suddenly say: you cannot smoke in any of the university buildings, not even in the cafeterias or anywhere [...] We would even think that it is exaggerated, then, I think we shouldn't go so far... because we create unnecessary conflicts. Things work themselves out in the end without creating... I don't know, I think many people would get very annoyed, and besides, they would turn into recalcitrant smokers...
>
> Male, smoker, social sciences, group 5

> I think it would be an inadmissible mistake to forbid smoking in the whole university. Because, among other reasons, the only thing that it creates is a feeling like you are not a normal person.
>
> Male, smoker, science, group 7

Smokers seem to believe that they can come to an agreement with non-smokers without the need of a policy. However, as presented in the previous chapter, this common courtesy approach might not be adequate when non-smokers are reticent about asserting their rights and do not wish to be considered confrontational. Besides, when there is no explicit policy, there is the implicit message that ETS does not represent a hazard, giving employees the mistaken impression that they work in a safe environment.

One of the main reasons against smoking restrictions presented by smokers was the possibility that their work dynamics would be affected. Several participants expressed it this way:

> For a person who smokes every half an hour, 5 minutes. I don't say it is, I mean, he/she is going to spend half of the morning... I imagine it will interrupt his work dynamics.
>
> Female, ex-smoker, social sciences, group 8

> I don't know about other departments, but in mine you cannot go out 5 times just to smoke.
>
> Female, non-smoker, science, group 6

Other participants were worried that their productivity would be impaired due to nicotine deprivation. Also they seemed to be worried about changes in mood, becoming more irritable, and therefore having an unpleasant atmosphere at work:

> I don't have time... maybe because of my type of job I need more concentration and I need to smoke sometimes, it helps.
>
> Female, smoker, social sciences, group 3

> Because, it [smoking restrictions] also affects work. I, you'll agree, I prefer a person in a good mood than in a bad mood...
>
> Male, smoker, science, group 7

> The only thing you get by imposing rules is to create more anxiety. If you tell me not to smoke, right now I can see that no one is smoking and in about a minute and a half I will light a cigarette and if you tell me not to smoke, ok I'll be pleased to go to the corridor. I wouldn't agree.
>
> Male, smoker, science, group 7

Many smokers claim that they smoke to reduce tension, relax, and increase concentration. However, contrary to commonly held views, research suggests that smokers do not do better on performance tests, nor do they score more favourably on measures of stress (Department of Health, 1998a). The evidence that smoking relieves stress is weak; research evidence suggests that rather the reverse is true (Parrot, 1995). Smoking creates an unnatural need for a drug, which is very difficult to ignore, causing stress to the addicted. Changes in mood and performance mainly represent the relief of adverse moods, rather than the attainment of beneficial moods. Research suggests that smokers gain little advantage from cigarettes, but smoke mainly to avoid withdrawal symptoms (Shadel *et al.,* 2000).

Indeed, nicotine abstinence symptoms include cravings and urges to smoke, headache, lack of concentration, irritability, anxiety, and increased appetite (Hughes and Hatsukami, 1986). These symptoms are not likely to last more than a month after stopping. Also, the development and refinement of medications such as bupropion or nicotine replacement therapy provide an opportunity for smokers to stop using tobacco without experiencing the full range and extent of withdrawal symptoms. However, it is expected that a proportion of employees will continue smoking. They might also suffer from withdrawal symptoms if they cannot smoke as much as they used to. Although the symptoms will not disappear completely, it is likely that they will reduce after the first months as the body adapts to the new nicotine levels.

It is difficult to assess the productivity effects of eliminating smoking at the workplace. However, it could be argued that smoking affects work efficiency more than smoking restrictions. It has been estimated that smokers' absenteeism rates are 40 per cent to 50 per cent higher than their non-smoking colleagues (Knuth and

Parker, 1986). On the other hand, non-smokers' productivity and well-being is enhanced in a non-smoking environment. A recent study carried out in a US airline company showed that productivity is increased and absenteeism is reduced among former smokers as compared to current smokers (Halpern *et al.*, 2001).

7.2.2. Areas for restriction

Participants were also asked about the specific areas in the University where smoking should be restricted. Table 7.2. presents support for restrictions in different areas of the University by smoking status. Restrictions in offices, meeting rooms, corridors, lifts, and toilets were supported by the majority of respondents. Support for restrictions in leisure areas, such as cafeterias and restrooms, seemed to be lower.

Table 7.2. Support for restriction in different areas of the university by smoking status

	Total (n= 407) % support for restrictions	Non-smokers (n=298) % support for restrictions	Smokers (n=103) % support for restrictions	Pearson χ^2
All buildings	45.5	55.5	18.3	p<0.001
Offices	75.5	83.3	52.6	p<0.001
Meeting rooms	84.0	88.1	72.5	p=0.001
Cafeterias	39.9	51.8	6.1	p<0.001
Corridors	54.1	60.5	36.4	p<0.001
Lifts	96.6	96.8	96.1	p=0.462
Rest areas	40.3	49.8	14.3	p<0.001
Toilets	83.6	86.0	77.0	p=0.029

Results from the questionnaire suggest that three quarters of the employees would support a smoking ban in the offices. Support ranged from 83 per cent amongst non-smokers down to 53 per cent amongst smokers. Employees spend most of their time in their private offices, and whether or not to restrict smoking in those areas was also discussed in the focus group interviews. Some participants, for instance, said:

> We used to have problems when we shared a big office between six or seven academics. One of them was obsessive and used to say "no, it doesn't work if you open the window because even if you open the window..." And then the next day: "no! because my desk is just close to the window, and yours is in the other corner" and the next day: "please open the window...". And we all ended up "smoking" the others' smoke.
>
> Male, non-smoker, social sciences, group 5

> This is just twaddle. In your office you arrange thinks to your liking. In my office, I can decide to smoke. A different thing is if you say, "Listen, I don't go to your office because you smoke and I don't want to go in there." Then we will go to the meeting room. But in my office I will be able to smoke, will I not?
>
> Male, smoker, science, group 7

> I think we need to differentiate whether the offices have consultation hours or not. If we didn't have them then it wouldn't be a problem. Think that in theory you have consultation hours. Some parents might come tomorrow and knock on you door.
>
> Female, smoker, social sciences, group 1

Focus group results suggest that the offices are a contested area, especially offices shared by smokers and non-smokers. Smokers who have their own private office seem to believe that they have the right to smoke in them but they should take into account that non-smokers (students, co-workers) also go into the office and they should not be exposed to ETS.

7.2.3. The "American model": an imposed fashion

The Spanish media has always reacted strongly to any legislation restricting tobacco. In 1992 when smoking was banned from public places and transport, and from health and educational settings, the headlines said: "the war against tobacco intensifies," "the offensive against smokers continues," "the crusade against tobacco continues." Critics compared those initiatives with a fundamentalist crusade against smokers that was restricting individual freedom (Escolà, 2000). They also accused the government of artificially importing an American fashion (Salvador-Llivina, 2000). This argument is still in use in the Spanish media. Smoking restrictions have been described as a "witch-hunt against smokers initiated in the USA" (Ilario, 2001).

In five out of the eight focus groups conducted, the topic of the "American model" was brought up. Participants identified this model with strict restrictions, where smoking is prohibited almost everywhere. Smokers described it like:

> In some places, like the USA, they put smokers in a transparent window and people look at them ... And one feels like- What am I doing? I am not killing anyone, am I?
>
> Male, smoker, social sciences, group 5

> I've smoked in New York, and as you said before, in the USA you cannot even smoke on the roof. I had to go from the top down to the ground floor.
>
> Male, smoker, science, group 7

> I wouldn't take the Americans as an example. I don't think they are an example for anything
>
> Male, smoker, science, group 7

There were different opinions. Smokers tended to see "the American model" as something exaggerated and discriminatory, while some non-smokers seemed to think that such a restrictive model could be useful in our environment. In the words of two non-smokers participants:

> For me, the best model, although it might not be suitable for other things, is the American model. It is frowned upon for people to smoke. You feel bad if you smoke. My friends told me that if you buy tobacco and go in any place smoking everyone is looking at you...then you immediately put it out... It is a bit radical. But for me, it is the model in which no one tells you anything, but it is not the done thing, because it is harming you... Without fines... but on the other hand, everyone knows it is bad.
>
> Male, non-smoker, science, group 2

> It is extremely common in the USA. I've seen in conferences that those who smoke go out to the street and smoke as much as they like. And then they come in. And inside, the environment is perfectly clean. I don't see any problem with that.
>
> Male, non-smoker, science, group 7

Indeed the US has some of the strictest workplace smoking regulations (Vogel *et al.*, 1993). A combination of social, economic, and health reasons have contributed to this situation. Brandt argues that the anti-smoking movement in the United States reveals core cultural and moral values. He describes the American society as a liberal society, tolerant of the risks assumed by individuals but highly intolerant of the imposed risks, disease, and even death, placed on the passive smoker (Brandt, 1998). Economic forces have also driven this American anti-smoking climate. While many Western developed nations have national health insurance that covers the health assistance of the employees, no such system exists in the U.S. American companies face higher costs when they employ smokers and also a risk of litigation from non-smoking employees affected by ETS (Borland *et al.*, 1992; Farrelly *et al.*, 1999).

Results from the focus group discussion suggest that smoking restrictions at the University might be perceived as an "imposed American fashion." There is evidence that tobacco companies have lobbied and contributed to this view (Escolà, 2000). When implementing the policy, an awareness campaign needs to be carried out, explaining that the policy comes from the need to protect employees from ETS, and that it is not an imposition, rather it is a result of the majority of employees' wishes to work in a safe environment.

7.3. PERCEIVED ADVANTAGES OF HAVING A NON-SMOKING POLICY.

The benefits of establishing a non-smoking policy at the work place include a combination of health, economic, environmental, and social advantages. There is compelling evidence to suggest that smoking bans reduce the exposure to ETS and increase quitting rates among employees. In addition to the health benefits, non-smoking policies are likely to result in cost savings for employers. Furthermore, workplace smoking bans may influence the social norms, making smoking a less acceptable behaviour.

7.3.1. Help smokers to quit

Focus group participants in favour of a smoke-free university thought the policy could bring a series of benefits. One of the perceived advantages was that it would motivate people to give up smoking or at least to reduce the number of cigarettes consumed. Some participants, for example said:

> When you go to the States or to England, there is such apprehension, that just to avoid the fuss and not to have to show your ID or passport every time you buy tobacco, that if you are not a hardened smoker, you stop, don't you? I think this would help many people to quit here...
>
> Female, non-smoker, science, group 4

> For me going out of the room is the same as going downstairs and smoking outside...It's going to take me the same time. It will even encourage me to smoke less. If before, I was smoking every half an hour or every hour, now I will think before having to go downstairs to smoke a cigarette.
>
> Male, ex-smoker, science, group 2

> You end up smoking less, because if I have to be going downstairs several floors and so on, I'll think more about it and I'll refrain a bit more.
>
> Female, smoker, science, group 7

These opinions are consistent with the research evidence presented in chapter 2. Non-smoking policies have been proved to provide an incentive for smoking employees to quit or cut down the number of cigarettes they smoke. The stricter the restrictions, the more effect they have on smoking prevalence (Fichtenberg and Glantz, 2002).

7.3.2. Impact on social norms

As explained in the previous chapter, social norms are one determinant variable influencing behaviour change. Participants seem to believe that having a non-smoking policy could affect social norms, making smoking a less acceptable activity. In the words of two participants:

> I think that because we all want to be accepted by society and seek acceptance, if society really turns radical against tobacco I think many of us would quit smoking.
>
> Female, smoker, social sciences, group 3

> I think what is really influential is the social aspect of it. I mean, for me, one poster, one fine... it doesn't influence me as much as people watching me smoking and staring at me...that is the worst fine.
>
> Male, non-smoker, science, group 2

In chapter two, the influence the environment has on the decision to change behaviour has been acknowledged. These statements support what social cognitive models have called normative influences suggesting that by introducing a non-smoking policy, smoking might become less socially acceptable, and smokers might perceive a stronger need to quit.

7.3.3. Prevent students from starting smoking

Finally, another perceived benefit of a future non-smoking policy was that it might deter students from starting smoking. Some focus group participants explained it like this:

> I, and many of my friends, when we came here in our first year at university, we smoked at weekends...But then when you go to the corridor and people offer you.... Many of them end up smoking a packet per day. And they started smoking at weekends. But they arrive and of course, everybody is smoking in the corridors, "do you want one?: yes". Then you start becoming an addict. Then if they arrive and find restrictions, it might be helpful for them.
>
> Female, ex-smoker, science, group 6

> I have friends that are not allowed to smoke at their parents home and say "I am at home, and I don't think about smoking", but on the other hand, when they are outside, it might be a psychological thing or something like that, they are at the university and they have the temptation to smoke, but

> they arrive home and they don't even think about it. Then, if here they find difficulties, they might quit.
>
> Female, non-smoker, science, group 6

Abercrombie *et al.* (1998) argue that universities are a setting in which students develop independence and learn life skills, through living or spending time away from home, and frequently through experimenting and exploring. As an educational setting the University of Navarre has the responsibility to provide an environment that encourages students and staff to make healthy choices. Results from this study suggest that a non-smoking environment might reduce smoking cues and encourage students not to smoke.

The implementation of a non-smoking policy can be perceived by students as a protective, parental role of the institution. Universities are seen as the bastions of tolerance, liberation and individual rights. According to Gambescia (1993), setting areas where students may or may not smoke conjures up the principle *in loco parentis.* Implementing a non-smoking policy in a university setting might be difficult because most of students do not feel that the effects of smoking can affect them (Villalbí, 1999). Some of them are likely to perceive smoking control as attack on their freedom. With a comparatively short smoking history a good personal health, young smokers are less likely to considering quitting seriously.

The impact of a non-smoking policy on attitudes and behaviours of youth has been investigated in several settings (Pierce *et al.*, 1991; Farkas *et al.*, 2000; Fagan *et al.*, 2001). For example, a cross-sectional study determined that adolescents who worked in smoke-free workplaces were substantially less likely to be smokers than were adolescents whose workplaces had no smoking restrictions (Farkas *et al.*, 2000).

7.4. OBSTACLES TO IMPLEMENTATION

During the focus group discussions, several issues were described as possible problems that might hamper the implementation of a non-smoking policy at the

University of Navarre. Participants were worried about the reaction of reluctant smokers, and about the possibility that some smokers will not observe the new regulations. The fact that some managers and professors, described as "VIPs", smoke was also a perceived problem. All these potential obstacles for implementation are presented and discussed in this section.

7.4.1. Smokers reluctant to quit

Some focus group participants expressed their concern about what is going to happen to those smokers who will not stop the habit once the policy is implemented. For instance, two participants said:

> It depends on how people are going to take it. It might be that because it is something imposed, because people, we are like this, so stubborn that because someone else is saying it then, I will smoke.
>
> Male, smoker, social sciences, group 5

> But there will be some who won't care, not one, many who will not want to know anything about this and they are going to be there all the time until they retire. Then, it cannot be said, I think, "that's it! No one smokes in the university, absolutely". What are these people going to do, then? Are they going home to work from home?
>
> Male, non-smokers, science, group 4

Total smoking bans are estimated to reduce smoking prevalence by four per cent (Fichtenberg and Glantz, 2002). Clearly it is expected that a number of smokers will continue smoking after the policy is implemented. Smoking areas can be provided to meet their needs. At the same time, smoking cessation activities should be available. As explained in the previous chapter, it is necessary to plan activities to encourage smokers who are reluctant to quit. Researchers have suggested that such campaigns should be sustained over relatively long periods, preferably over years, or ideally as long as the smoking problem continues at the workplace (Abrams *et al.*, 1994).

7.4.2. Provision of smoking areas

Most of the employees at the University favoured the policy option that smoking is prohibited except in designated areas. However, this solution was perceived as problematic by some of the focus group participants. On many occasions when talking about smoking areas, participants mentioned experiences they have had when travelling abroad. For example, several participants said:

> I think that you create ghettos for smokers and that's terrible. I've seen smoking areas at international airports [...]. They are normally dirty, full of papers... A similar thing happens with smoking areas in restaurants, they normally have worse tablecloths. I remember a glazed, transparent cubicle with quite high glass walls, double the size of this room, where 15 people were smoking. And you could see a tremendous cloud of smoke. This is extreme, and that is what you get creating smoking areas. I mean, no one is saying that they should prepare a lovely lounge for us, but I think, in the end, they are marginalizing smokers terribly.
>
> Female, smoker, social sciences, group 3

> When I travel abroad, well, you see smoking areas and non-smoking areas. And the smoking area is always a little corner where, indeed, everything is covered by smoke, of course what do you expect from this little corner?
>
> Male, smoker, social sciences, group 3

> It is like the rounding up of plague victims, isn't it? Like in the US, those small rooms where people are left to smoke.
>
> Female, non-smoker, science, group 6

This might suggest that the idea of separating smokers and non-smokers is seen as a foreign practice, and therefore not common in Spain. Both smokers and non-smokers seem to identify smoking areas as separatist, discriminatory actions, and several times used the word "ghettos" to describe them.

When talking about the idea of creating smoking areas at the University, participants seemed to be worried about the image this would produce:

> Ten people smoking together producing a cloud of smoke and no smoke in the rest of the place. I think this looks worse. Either non-smoking everywhere, or smoking everywhere.
>
> Female, ex-smoker, science, group 6

> 30 per cent out of 3,000, that makes around 900. Nine hundred students smoking at the entrance between lecturers. It is going to be very nice to watch...[sarcastic tone]
>
> Male, smoker, science, group 7

Some non-smokers were against creating smoking areas for different reasons. They thought it would not solve the problem, as gases diffuse, and also because the University had other priorities to spend the money on. Some participants, for instance, said:

> Gases diffuse. What is the sense of having a smoking room if then you open the door and what happens? I don't understand the area division. For instance in buses, it used to be like that: from this seat to the rear you can smoke, come on!
>
> Male, non-smoker, science, group 7

> Fitting out smoking areas will require terrible amounts of space, and we simply don't have it.
>
> Male, non-smoker, science, group 4

> I think it is very controversial when there are no other rooms in the university. [...]. In my department we have been asking for very long for a place to eat. We have our rest area in the corridor. Then, I think it is to have some nerve to try to look for a place for smokers when other rooms are needed.
>
> Female, non-smoker, science, group 6

But some others thought creating smoking areas could be beneficial. Smoking areas were seen by some participants as a positive sign towards smokers, suggesting that

their needs are being taken into account and that the policy is trying to create a supportive environment for them. One participant explained it like this:

> I think fitting out relatively comfortable places would imply understanding towards the smoker, and at the same time, I think that because it is uncomfortable to leave the office every time you want to smoke, they would end up quitting.
>
> Female, non-smoker, social sciences, group 1

These results suggest that providing smoking areas at the University is a controversial solution. Some non-smokers seem to think that it will not solve the problem of passive smoking, and also that there are other priorities for the precious space in the University. It has been argued that while smoking rooms appear to look after the welfare of smokers in the short term, they may help to sustain smoking in the longer term (Brownson *et al.,* 2002). For those trying to quit, smoking areas might represent a temptation and prompt relapse at inevitable moments of weakness. Smoking rooms can have a tendency to become a social place for the workforce and new employees might feel encouraged to "fit in" and join the smokers on their breaks.

On the other hand, the questionnaire has revealed that there is not enough support for implementing a complete smoking ban. The best solution might be to have an initial phase where smoking areas are provided, and to move into a complete smoking ban once employees are more supportive. Each department should be involved in the selection of smoking areas, according to the space available and their needs.

7.4.3. Low compliance

Biener and Nyman (1999) suggest that the failure of many previous studies to detect a significant effect on smoking cessation of workplace smoking bans may be a consequence of inconsistent enforcement of policies. If smokers are breaking the policy, it means that norms have not changed and therefore smoking cues are not reduced. The worst effect of non-compliance may be its effect on smokers'

perceptions of their ability to quit. As explained in the previous chapter, self-efficacy has long been seen as a fundamental requirement for changing health behaviour (Bandura, 1997). When a smoker observes that he or she is continuing to smoke, despite the fact that smoking has been prohibited, it is likely to lead to the perception that he or she is not able or not sufficiently motivated to quit.

Previous research has shown that employee and public responses to simulated violations of non-smoking regulations in Spain is low. For instance, in a study carried out in Sabadell (Spain), 158 sites where smoking was forbidden were visited by observers who lit a cigarette, simulating the act of smoking. A warning was given in only 17 per cent of sites (Bonfill *et al.*, 1997). Some focus group participants described situations where smoking restrictions are not observed in public places. For instance:

> There aren't many solutions. I am aware of teachers in primary schools that have had parents, and the school against them. And they have continued smoking because no one is going to bring proceedings against them even if they smoke in class.
>
> Female, non-smoker, social sciences, group 1

> Smoking is prohibited on the metro in Madrid, but everyone does it. And it is because of what you have just said, because of the numbers. There are so many. Who is going to chase down the one who lights a cigarette on the underground platform? Of course no one.
>
> Male, ex-smoker, science, group 2

Participants also gave examples of situations where smokers broke the University regulations in force at that time. For example, they said:

> Dialogue in the social sciences site, group 1
> Female 1 (smoker): Have you seen anyone smoking inside the library? No one smokes in the library.
> Female 2 (smoker): Sometimes on a Saturday morning when there are not so many people...

> Male 1 (non-smoker): I know there is a very important person who smokes there...
>
> When you show a film in the classroom and switch off the lights, after a while, if it lasts more than one hour, there are people who smoke. When it happens I normally say something. I don't interrupt the showing; I say it at the end. I say it at the beginning and at the end, so it doesn't happen again next time. You can appreciate a lack of respect, of awareness from the students. The room and the windows are closed, the blinds down. There is no ventilation. I don't know if it is the case in other faculties, but this happens to me. There are always a few students who smoke.
>
> Male, non-smoking, social sciences, group 5
>
> It is forbidden to smoke in the laboratories, but people do. There is a restriction, but no one respects it.
>
> Female, non-smoker, science, group 6

Both previous research carried out in Spain and results from this study suggest that there might be a problem of compliance once the measures are implemented. Efforts should be taken to ensure that the policy is enforced. According to Davis (1998), education about the dangers of passive smoking lays the groundwork for good compliance with regulations. Education about the dangers of passive smoking has increased public support of non-smoking policies in the United States. In France, by contrast, where public smoking restrictions were imposed by "top-down" action of the federal government, without meaningful grass-root pressure, compliance has been less than ideal (Vogel *et al.*, 1993). It is therefore necessary to raise awareness and make sure that employees know the new regulations and understand the rationale behind them.

However, education alone is not sufficient. The policy should identify persons responsible for increasing awareness, and gently remind employees about the new regulations. Ideally a discipline procedure should be planned in case of persistent breaches. A staged-approach discipline is recommended (WHO, 2002b). Any employee in breach of the policy would initially receive an oral warning from their

line manager. A second breach would result in a written warning, and a third one would result in a disciplinary interview. If the employee expresses a desire to stop smoking, referral to cessation assistance would be offered.

The probability of progressing to the disciplinary interview is small, particularly if smoking areas and cessation assistance are offered as alternatives. However, the existence of a disciplinary process ensures that employees are aware of the importance placed on their health and well-being and that non-compliance will be taken seriously.

7.4.4. The difficulties of saying "no" to senior staff who smoke

Having a senior staff-member who smokes was thought to be a problem. Some participants illustrate situations in which the boss or a person high in the hierarchy smokes, making it difficult to have a non-smoking environment:

> There is an incredible case, because lecturers don't smoke but there is one professor who smokes in class[...] He comes the first day and says, no one is bothered if I smoke, are they? Meanwhile he is lighting his cigarette. On one occasion, one student said, "yes, I am bothered" and he replied, "I don't care," and continued smoking.
>
> Male, non-smoker, social sciences, group 8

> Yes, I know the boss in x department, he asks the secretaries in his office to go and buy cigarettes for him: "take the car, go to Pamplona and buy me five cartons." It is like that.
>
> Male, ex-smoker, social sciences, group 8

> It has happened to me, with more proper authorities and professors much more respectable than me, that we are in a meeting and several of them light a cigarette. Either they ask if I mind, and therefore I am not going to say "yes," because for me they are "superior beings," or they simply don't ask. I think they should not put me in the situation of having to ask a

"superior," in inverted commas, person: "put out your cigarette" [...]. I think we need a regulation to avoid situations like this.

Female, social-smoker, social sciences, group 1

I don't feel I have the authority to say to a professor "Excuse me, you are smoking here and it is forbidden".... I would say it to a student, but to an older person... it would be embarrassing.

Male, non-smoker, social sciences, group5

Participants explained that they would like these people not to smoke but the fact that they have a higher rank makes it difficult to talk to them. These examples illustrate why the "common courtesy approach" is not the way to solve smoking problems at work. Bosses might abuse their position, while employees might not feel free to ask a superior not to smoke in their presence. Having a non-smoking policy would help to avoid this type of situations.

7.4.5. Top to bottom, or bottom to top implementation?

Talking about the process of implementing a non-smoking policy, most of the participants seem to agree that the regulations should come from the very top:

Dialogue in the social sciences site, group 1:

Female 1 (smoker): If there are regulations they should come from the top. It can't be that "there is a regulation" but no one knows about it. That's the first step.

Male 1 (non-smoker): And here [University of Navarre] the regulations that go from top to bottom work out quite well. Better than the ones that go from bottom to the top.

All: Yes, yes.

Female 1: Look, this is not the case because I am not a hardened smoker, but if you tell me "don't smoke," I am sorry, but I won't pay attention to you. But if from the top there is a notice that says "It is forbidden to smoke in your office," I will, of course, not smoke.

Male 1: Then the Vice-Chancellor should sign it.

Female 1: Yes indeed, he should be the one who signs it.

At the same time, several interviewees identified that a more democratic approach should be taken and that the particular areas where smoking will be allowed should be discussed within each department:

> I think we need to write in the offices "non-smoking" or "smoking areas." But this shouldn't come by decree, but by consensus within each department.
>
> Male, non-smoker, science, group 4

> There has to be a regulation from the top that says, now each department ought to find a place where smoking will not affect anyone.
>
> Female, non-smoker, science, group 4

> I believe the departments themselves have a lot to say. We need to talk about things and decide where to or not to smoke. But with dialogue, otherwise it is impossible.
>
> Male, non-smoker, education, group 1

Some authors have suggested that there is no best way of implementing smoking policies, but that 'the best way' depends on how decision making fits specific content and context factors. A case study carried out in the Netherlands showed that a highly confrontational and decentralised decision-making approach to implementing a complete smoking ban resulted in an effective smoking ban, but was to some extent at the cost of employees' satisfaction with the policy and with how the policy was implemented (Willemsen *et al.*, 1999).

Existing implementation protocols for non-smoking policies instead recommend adjusting interventions to employee preferences. They acknowledge the importance of obtaining support from top management, but emphasise taking into account employees opinions (USDHHS *et al.*, 1996). This model of information-driven decision-making was used at the University of Navarre. The results of the questionnaire and focus group interviews dictated which smoking option was feasible. At the same time, the approval from the top management was sought to formalise the policy and ensure compliance.

7.5. SOLUTIONS: A NON-SMOKING POLICY TAILORED TO THE UNIVERSITY NEEDS

There was a compelling argument and powerful support for implementing a non-smoking policy at the University of Navarre. Objective data from the environmental tobacco measurements and questionnaire results suggested that employees were exposed to harmful levels of contamination. An overwhelming majority of employees supported a more restrictive policy on smoking. Approximately a quarter of the employees at the University smoked. They could benefit from health education programmes and campaigns to help them to stop the habit.

Based on the results and the evidence presented in this and previous chapters, the following changes were proposed to the Vice-Chancellor's office:

1) Results from the questionnaire suggested that acceptance for a total smoking ban in the University was low. A non-smoking policy with designated smoking areas was proposed. This is the first stage. The final aim is to have a completely smoke-free university. The duration of this first stage depends on future evaluations. A complete ban should not be imposed if there is not enough support from the employees.

2) The suggested day to start with the implementation was the 31st May 2002, World No Tobacco Day. This day was selected because of the widespread impact that it has at an international level, and because of the extensive coverage of the event in the media. The date also allowed the policy to be announced several months in advance.

3) Because of the differences in terms of building structure, ventilation, and number of staff, it was suggested that every department would get involved in the selection of the smoking areas. The need of a democratic approach had been identified in the focus group interviews. Heads of departments, student's representatives, and the head of the Estates and Buildings service would be consulted to determine which areas would be

designated for smoking. To implement the measure effectively, the smoking areas should be well separated from the non-smoking area, and ideally should have independent ventilation.

4) Those who do not share an office with other non-smokers would be allowed to smoke, as long as they are not attending to any students or colleagues.

5) People should not smoke in the customer services areas.

6) It would not be permitted to smoke during meetings, although if they are longer than one hour, a break should be planned so those who wish to, could go to the smoking areas.

7) Measures should be announced at least two months in advance. Based on the focus group results, it was suggested that the information should come from the Vice-Chancellor's office. It was proposed that a letter through the internal mail should reach every single employee and inform them about the new policy. Students should also be informed through a channel that the Vice-Chancellor's office would consider appropriate.

8) In order to create awareness and encourage collaboration, different activities would be carried out during the two months previous to the policy implementation. The members of the Healthy University Project would be responsible for:
   - An information campaign on the project results, justifying and announcing the future restrictions, and the date they will come into effect.
   - Informative and educational conferences. In these conferences several experts would talk about the harmful effects of active and passive smoking, and about smoking cessation strategies. Furthermore, self-help materials to quit smoking would be provided at the entrance of the conference hall.

9) Signs indicating smoking and non-smoking areas needed to be placed in every building. The Healthy University Project team suggested that part of the money collected through research grants could be used for this purpose. This would be arranged with the Estates and Buildings service.

10) Help to those who wish to stop smoking should be provided based on the stages of change theory. A user-friendly, self-help booklet would be created and made easily available to the employees at the press and information counter at the entrance of each building; the Healthy University Project webpage would include a section on steps to quit smoking; additionally, books on how to quit would be placed in the different University libraries for those in precontemplation and contemplation stages. An agreement was reached with the occupational medicine and pneumology departments. They would offer brief and intensive intervention for those smokers in preparation stage.

11) A vital part of the implementation process is the policy reinforcement. The porters at the University could assume this role, gently reminding those who fail to observe the rules where the smoking areas are located.

12) It was also suggested that all the ashtrays were removed from the non-smoking areas and moved to the locations designated for smokers. This would be arranged with the cleaning service in the University.

The following activities were also planned:

- Annual celebration of the World No Tobacco Day (31st of May)
- Annual campaigns in the University media, inviting students and employees to take part in the smoking cessation clinics provided by the University Clinic and/or the National Health Service.

- Development of an *Experts on Tobacco Student Network*. Nursing, medicine and pharmacy students would be specifically trained to help other students in the process of quitting.
- The policy would be reviewed regularly. An e-mail suggestion box would be put on the webpage to collect information on possible disputes, problematic areas, and suggestions for improvement.

7.6. SUMMARY

Non-smoking policies should be planned according to the needs of the population. Previous research suggests that success will ultimately depend upon collaboration and responsibility being shared between workers and managers (Abrams *et al.*, 1994). Without planning, without consultation and dialogue, smoking policies are likely to end in failure.

A non-smoking policy adapted to the University needs has been proposed. Smoking should be prohibited in the University of Navarre, except in designated smoking areas. Smoking cessation assistance adapted to the different stages of change should be provided. The presence of some smoking employees with negative attitudes may become an obstacle to the initial policy implementation. The presence of visible smokers can markedly reduce the degree of compliance with the restrictions. If the new policy is to be successful, efforts targeted specifically at ensuring compliance are necessary.

Chapter 8

Putting theory into practice

8.1. INTRODUCTION

This chapter explains how the implementation process took place and the difficulties encountered when putting theory into practice. It offers a tentative evaluation three months after the implementation based on anecdotal evidence on direct observations and the electronic mails received in the project suggestion box.

8.2. PREPARATION FOR CHANGE

Getting a new idea adopted even when it might be beneficial is often very difficult. Managers can be particularly nervous about modifying a system that is perceived to work relatively well. At the same time is also difficult to change the social norms that define what the majority of the members of the organisation regard as normal or acceptable practice.

Promoting health at a community level requires the understanding of social networks. Implementing a non-smoking policy at a work place is an innovation that will not be received equally by all employees. Public health oriented theories about

community behaviour change, such as diffusion theory (Rogers, 1995), describe the factors related to the adoption an innovation within a group or culture.

According to Rogers *(ibid.)*, how the innovation is perceived by the members of a social system determines its rate of adoption. This needs to be taken into consideration when planning to implement changes within a defined population, like the case of a workplace. Typically, a small percent of a population will rapidly accept the changes. These early adopters make the innovation visible and communicate its benefits to the rest of the population. The late adopters decide then whether or not to adopt the innovation following an assessment of cost and benefits. Finally there is always a more sceptical group, that Rogers calls laggards, which resist acceptance *(ibid.)*.

Abrams *et al.* (1994) suggest that this structure can be compared to the stages of change groups. Early adopters would be at preparation and action stage, late adopters at contemplation and laggards at precontemplation. The key operating principle of diffusion theory is that in order to achieve lasting change at the organisational level, a critical mass must develop, seen as the point of inflection of the diffusion curve (Rogers, 1995). This critical mass represents a shift or a normative change within the workplace organisation as a whole. In the case of non-smoking policies the normative change will occur once the majority of the members of the University regard non-smoking environments as a usual or acceptable practice.

Existing implementation protocols for non-smoking policies suggest four steps to design and implement a successful non-smoking policy (USDHHS *et al.*, 1996). The first step is orientation. It is recommended that interventions are adjusted to employee preferences by means of a survey, and that a working committee is set up to plan and implement the policy. The second step is to decide on the policy and to develop a plan for implementation. Thirdly it is important to obtain support from top management. And the last step is to inform employees about the policy changes and announce the consolidation of the policy.

Figure 8.1. presents the steps followed by the Healthy University Project to implement a non-smoking policy.

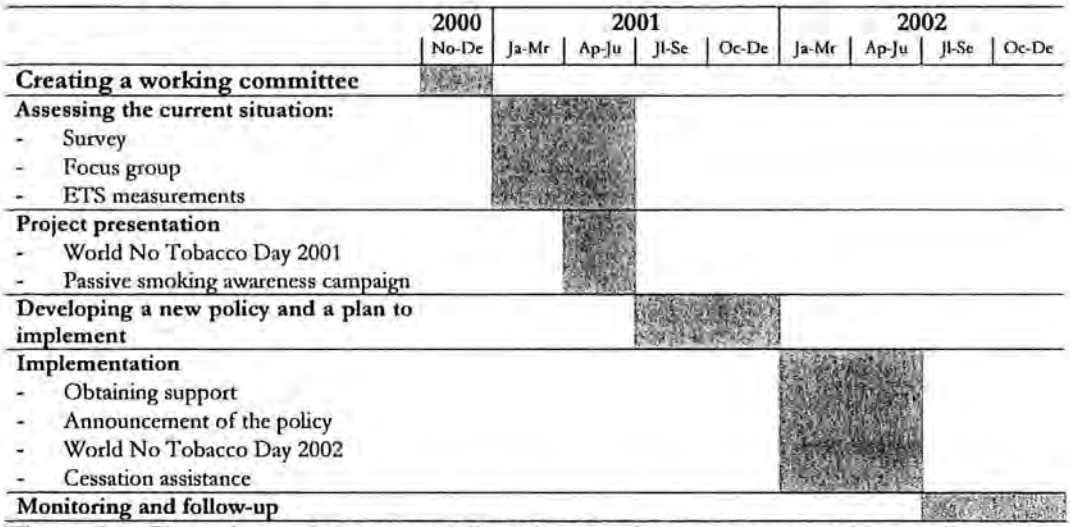


Figure 8.1. Chronology of the steps followed to implement a non-smoking policy at the University of Navarre

The main researcher set up a working committee for planning, implementing and evaluating the policy. The team consisted of three nurses (the main researcher, a nurse specialised in smoking cessation, and a midwife involved in smoking cessation among pregnant women), two medicine lecturers specialised in public health, and a scientific expert in contamination measurements. The group was a mix of non-smokers, ex-smokers and smokers.

The process of data collection provided the information needed to plan a new smoking restriction policy tailored to the University's needs, but at the same time it served as a public relations exercise. When the questionnaire reached 641 employees at the University rumours started that something was about to happen in relation to smoking and that the opinions of the employees were wanted. Thirty-four extra questionnaires from people who had been forwarded the project webpage by other colleagues were received. Those questionnaires were not included as they were not part of the initial random sample, but are proof of the interest aroused. The survey response rate (70.4 per cent) also suggests that smoking at the University is a topic employees are concerned about.

The focus group sessions were also part of this public relations exercise. Participants felt part of the planning process and expressed their satisfaction at having their views heard. Some of the participants described themselves as "members of the Healthy University Project planning committee" when explaining to other colleagues that they were taking part in the group interviews.

8.2.1. Project presentation

How the new idea is communicated to the individuals concerned is very important. According to diffusion theory (Rogers 1995), mass media channels are more effective in creating knowledge of innovations, whereas interpersonal channels are more important in forming and changing attitudes towards a new idea and therefore influencing the decision to adopt or reject it. There is a strong interaction between individuals and organisation levels of change. As small groups and single individuals change, this change is diffused into a larger subgroup and ultimately resulting in an organisational change. This organisational perspective suggests a time frame for change that is in the order of several years.

Previous research has stressed the importance of giving information and increasing awareness before the enforcement of the smoking ban (Joossens, 1990). The official presentation of the project to the University community took place on the International World No Tobacco Day, 31st of May 2001. Prior to the event, the Healthy University Project team discussed in a brain storming session possible logos and slogans to advertise the project. The pilot focus group session was used to discuss them with a group of members from the University community (the different materials presented to the group are shown in appendix 8)

Figure 8.2. shows the poster that was finally chosen. The slogan said "New air is coming." It presented a picture of the main University building and cigarettes flying out of the University. The symbology of the slogan and the picture is the following: the new initiative, the Healthy University Project, is the new current that will clean the University air and will bring a healthy environment (represented by the tree and

the clean sky on the left hand side of the picture). The poster was placed on every University notice board. Several requests were received form employees who wanted to have a copy of the poster to put in their office.

Figure 8.2. Poster used to present the Healthy University Project

A leaflet was distributed explaining the rationale and the aims of the project, putting special emphasis on the effects of passive smoking. The topics covered were the following: information on the current legislation about smoking restriction in public areas, definition of passive smoking and how it affects health, and finally the benefits of having a non-smoking policy at the University. The Spanish version and the English translation of the leaflet can be found in appendix 9. As discussed in chapter 5, education about the dangers of passive smoking plays a vital role in preparing the ground for policy implementation. Compliance is likely to be higher if both smokers and non-smokers acknowledge the health rationale behind the policy.

The project received full coverage in different mass media. The activities where announced and reported in the University and the regional newspapers[1]. The members of the Healthy University Project team were interviewed on local television and radio. A national TV channel also covered the event.

[1] Diario de Navarra. 31 May 2001. Pg. 35 (http://www.diariodenavarra.com)
Diario de Noticias. 31 May 2001. Pg. 27 (http://www.diariodenoticias.com)

The 31st of May 2001 served as a launching pad for the Healthy University Project. Two big banners announced the events. One was placed at the science site, in front of the University Clinic (Figure 8.3.) and another one at the campus entrance.

Figure 8.3. Banner announcing the celebration of the International World No Tobacco Day.

A campaign to raise public awareness among employees and students was organised. A conference on smoking was held in the science conference building. Posters with the slogan "New air is coming" were hung on all University notice boards and leaflets were placed at the entrance of each building. Three stands were placed at the entrance to the science, social science and administration main buildings. There, employees and students could receive information on the project and leaflets about passive smoking.

A series of tests was available to everyone. Both smokers and non-smokers could measure their expired carbon monoxide levels, and get information on the results. In the stands smokers could also measure their physical dependence on nicotine with the Fagerström test, and their attitudes towards change according to the transtheoretical model. Figure 8.4. shows several employees filling in the tests and a students measuring their CO levels. A total of 539 measurements were taken during the day.

Figure 8.4. Employees and students taking part in the activities of the World No Tobacco Day (31st May 2001)

The World No Tobacco Day had never been celebrated in the University before. It was therefore an ideal opportunity to raise awareness of the project and promote smoking cessation. Internationally, the World No Tobacco Day is a day marked by an appeal to smokers to quit for at least 24 hours, as a first step toward breaking their tobacco addiction. Previous research suggests that No tobacco Day is effective in increasing smoking cessation at a population level (Frith *et al.*, 1997).

8.3. IMPLEMENTATION PROCESS

8.3.1. Obtaining support

In the implementation process, lots of care should be taken to ensure that there is broad employee support. In terms of decision-making approaches, one could say that a rather decentralised and information-driven approach is recommended. The best policies are those developed in partnership with employees but it is also very important that senior management backing is made public (WHO, 2002b). This indicates that the policy is a priority in the corporate agenda.

Based on the findings of this study, a report was sent to the vice-chancellor's office on the 30th of March 2002. The report was sent together with a letter that summarised the rationale behind and the need for a new non-smoking policy at the University, and proposed the changes presented in chapter 7. The proposal was

approved on the 12th of April, and the 31st of May was selected as the date for implementation.

Three separate meetings were held with members of the Healthy University team and the head of the Estates and Buildings service to discuss the designated smoking areas. The scientific expert on contamination measurements analysed the structure and ventilation of the suggested locations in order to select the most appropriate ones. The criteria applied were that smoking areas should be well separated from the non-smoking areas, and ideally should have independent ventilation. An initial list with all possible locations was sent to every head of department and to the student's representatives to agree on the final decision. An agreement was reached with all departments apart from two who expressed their wish to continue without a non-smoking policy. They were informed that the majority of the employees and the Vice-Chancellor office supported the policy and that their collaboration would be appreciated. Finally they accepted the areas selected without further suggestions.

Similarities can be found between the design of this project and action research. Both are directed towards change and have an active participation component. However, this study does not comply with the two main distinguishing features of action research: the cyclic process and the research partnership (Waterman *et al.,* 2001). Although this study includes a situation analysis, planning, and action, it does not fully cover the evaluation process and therefore lacks of the cyclical nature of action research. According to Meyer (2000) the clear cut demarcation between researcher and participants that is found in other types of research may not be so apparent in action research. Research participants in this study had an active part and had some involvement identifying the priorities; however, the responsibility remained with the researcher. In action research the research design must be continually negotiated with participants. This process is not always feasible: In this study, for example, the researcher needed to be able to work across boundaries (between employers and employees) and take into consideration different, sometimes competing, agendas.

8.3.2. Announcement, publicity and preparation

Previous research has suggested that the policy should be announced three or even six months in advance (USDHHS *et al.*, 1996; WHO, 2002b). However in this case the short notice was not considered to be a problem. Both the data collection process and the awareness campaign the 31st of May 2001 had reached a large number of employees and served as a long-term announcement of what was coming.

The communication of the new policy was carried out through the vice-chancellor's office. However, the report recommendations were not fully followed. Instead of a letter to each employee signed by the Vice-Chancellor asking for collaboration, a letter with a stamp of the vice-chancellor's office was sent to each departmental board, asking them to forward the information to the rest of the employees. A translated copy of the letter can be seen in appendix 10. Unfortunately, this procedure did not guarantee the receipt of the information on time by all the employees. Irregularities were discovered in the coverage process, and as a result some employees did not receive written information about the new regulations. Reasons for these irregularities have not been fully investigated.

Efforts were taken to complement the information sent and ensure that all students and employees would be aware of the upcoming policy. A mailing was sent to all the head of departments, secretaries, porters, cafeteria employees, and participants of the study, summarising the results of the study, informing about the new policy, and asking for collaboration. A banner was placed in the main University webpage, with the logo "Did you know? From the 31st of May the University will go smoke-free. For more information click here" (Figure 8.5). The project's web page was updated and included a section announcing the new policy, explaining the grounds and informing about the new smoking areas.

Figure 8.5. Banner announcing the new policy at the University of Navarre webpage. The texts said: "Smoke-free University. Have you heard? We start on the 31st of May. Click here for more information"

During the month prior to the implementation date, an itinerant exhibition was set up in the different halls of the University buildings. Three big posters presented the survey and contamination measurements results, and a forth one summarised the new policy and indicated the new smoking designated areas (see appendix 11). This information was also put on the project web page. Problems emerged when members of the Healthy University Project did not get permission to set up the exhibition in one of the buildings. The head of the department was a smoker and had made public his rejection towards the new policy. A notice from the Vice-Chancellor office was sent and finally the exhibition was displayed. This event is consistent with diffusion theory (Rogers, 1995) when implementing change, there is always a more sceptical group that resists acceptance.

As some focus group participants predicted, (see section 7.4.5) having the support from the majority of employees and the Vice-Chancellor office helped to reduce resistance and facilitated the implementation.

Three conferences titled: "Tobacco and health: working without smoke at the University of Navarre" were held the on the 9th, 15th, and 23rd of May in three different locations of the University. The two speakers were experts on the field public health and smoking cessation. The event was announced at the University magazine and at the project webpage. The conferences were scheduled to take place at 16.00h and 17.00h, a time thought to be most convenient for both, students and university employees. However, attendance was very low. Less than ten people were

present at the two first conferences, and the members of the Healthy University team decided to cancel the third session. It is difficult to ascertain the reasons why the conferences were not successful. One explanation could be that employees were not aware of the event. Coverage might have been improved if announced earlier and on more University media. However, this is unlikely as most employees and students read "University Life," the weekly magazine where the conferences were announced. A more plausible explanation could be that people had already received enough information on the project through e-mail, the project webpage, and especially the itinerant exhibition of the results and did not consider attending the conference beneficial.

8.3.3. Implementation day

All non-smoking signs were placed the evening before the implementation day. At the entrance to each building a sign said: "Smoking in this building is only permitted in the designated areas." A total of 280 non-smoking and 40 smoking signs were put up.

The activities carried out on the implementation day were very similar to those celebrated on the 31st of May the previous year. Stands were set up in three different locations and employees could again measure their CO levels and their scores on the Fagerström and Prochaska tests. On this occasion leaflets to help smokers to quit were distributed. This self-help material was specially developed for the vast majority of University smokers who are in precontemplation and contemplation stages. The leaflets discuss the risks versus benefits of tobacco use and suggest five keys for quitting.

Figure 8.6. shows the front page of the leaflet created by the members of the Healthy University Project team. The complete leaflet (original and translated text) can be found in appendix 12.

The leaflet's cover said: "Quitting smoking is not easy but you can do it with commitment, effort and help." A severed rope symbolised the break with nicotine ties.

The structure of the leaflet was based in the popular Public Health Service brochure "You can quit" published by the US Centers for Disease Control and Prevention (http://www.cdc.gov/).

Figure 8.6. Cover page of the leaflet created to help smokers to quit.

To increase awareness of the new policy and interest in this self-help brochure, book dividers with the same logo were distributed to the University students and staff (figure 8.7).

Figure 8.7. Front and back of the book divider created to announce the policy. Text said: "Have you heard that from the 31st of May the University will be a non-smoking institution? For more information visit www. unav.es/enfermeria/UniversidadSaludable/index.html"

8.3.4. Reinforcement and continuous evaluation

As discussed in chapter 2, previous studies have suggested the observance of smoking restrictions in Spain is low (Bonfill *et al.*, 1997; Fundación Grupo Eroski,

1998; Nebot *et al.*, 2001). In this study, concern about compliance of future restrictions in the University was one of the discussion topics. Focus group participants have described non-compliance as something common in airports, underground, lifts, toilets etc. As discussed in previous chapters reinforcement is a vital part of the implementation of a non-smoking policy. In this case a high risk of non-observance can be expected. Therefore, special measures should be taken.

During the first months of implementation, team members and volunteers from the Healthy University Project made direct observations in the different buildings to check that the non-smoking signs were in place, ashtrays had been removed and people were complying with the policy. Contacts were also made with the Cleaning Service. They provided information about the areas where more cigarette butts were found. Three months after the implementation a letter was sent to the head of the Estates and Buildings service, summarising the problematic locations where more signs should be placed and suggesting changes on the designated smoking areas based on the direct observations or the suggestions made by employees.

8.3.5. Reactions to the new policy

An email-suggestion box was put on the webpage and also advertised in all the Healthy University Project's materials (leaflets, posters, internal memos, etc). People could send an e-mail with their comments, complaints or suggestions. Twenty-nine messages were received during the first three months of implementation.

In 16 out of the 29 messages employees expressed gratitude and congratulated the members of the project for this initiative. In four of the messages senders offered to collaborate in the project.

One message reported lack of compliance in one building where smokers were smoking in toilets. Three messages questioned the reinforcement process as no information had been given on what the consequences of breaking the policy were. Eight messages concerned the designated smoking areas. Four messages were written by smokers that complained about the initiative.

This tentative evaluation based on the e-mail response to the policy should be interpreted with caution due to the small number of messages received (29 out of 1923 employees). Furthermore, only those employees who had access to electronic mail could send their comments, therefore the sample might not be representative. All messages were replied to by one member of the project team. Replies tried to be assertive, and emphasise the health motive of the project and the desire to benefit the whole University community.

8.4. LESSONS LEARNED

Obstacles and some level of resistance to change can be encountered when trying to implement a non-smoking policy. It is important for the members of the working committee to be tactful and show willingness to negotiate. At the same time, having the support from the majority of employees and the vice-chancellor's office helped to solve conflicts.

Some of the designated smoking areas have been re-evaluated and changed on the basis of the comments received. Ideally, the policy should be reviewed every 12 months. The preliminary evaluation three months after the implementation based on direct observations and the electronic mails received in the project suggestion box, suggest differences in compliance among science and social science buildings. Reasons behind these differences need to be explored.

Brochures and the Internet are key channels that can be used in a large campaign incorporating the information and messages identified in the survey. The vast majority of the University employees and students use the Internet. In this project the electronic mail has been proved to be a very useful tool to collect feedback on the implementation process. Conferences, on the other hand, required lots of effort to prepare and were not very successful.

8.5. SUMMARY

The experiences from the Healthy University Project are that implementing a non-smoking policy based on research evidence is feasible and that the policy requires continuous follow-up and evaluation. Although some complains have been received, the general the acceptance seems to be excellent and most of the messages received in the email-suggestion-box have been very positive.

Chapter 9

Conclusions

9.1. INTRODUCTION

This thesis has explored issues and concerns around the design and implementation of a non-smoking policy in a university setting in Spain, a country without a long record of smoking control efforts and where smoking is still widely accepted. It has been shown that formulating a realistic policy for a smoke-free university can be achieved by consultation with all those concerned. Conclusions that can be drawn from this project and questions for future research are presented below.

9.2. RESEARCH OUTCOMES

The fist objective of this thesis was to assess attitudes to, knowledge about and exposure to ETS among employees in a university in Spain. This study has revealed that an extensive number of employees at the University of Navarre was exposed to second-hand smoke on a daily basis. The measurement of respirable PM and benzene showed that in some locations contamination levels went well beyond the legal thresholds. Taking into account that there are no safe levels of exposure to

ETS, an intervention was necessary to improve the working conditions of students and staff.

Results from the focus group interviews suggested that social norms did not protect non-smoking employees at the University of Navarre. The common courtesy approach proposed by the tobacco industry as an alternative to restrictive non-smoking policies was creating social problems among university staff. Smokers were not always asking permission to light up. At the same time, asking someone not to smoke was perceived as being intolerant. Non-smokers tended to accept ETS in order to avoid confrontation. The fact that smokers and non-smokers were forced to work side-by-side in the workplace for such long periods meant that smoking was a potential source of conflict. By implementing a suitable smoking control policy, the university had the opportunity to reduce this source of conflict.

Awareness about the health effects of passive smoking was not very high especially among employees who smoke. A health education campaign about the dangers of passive smoking can help to understand the health rationale behind the smoking restrictions and improve future compliance.

Secondly this work aimed to assess attitudes towards smoking restrictions and the anticipated impact of a smoking ban on the university staff. Results revealed that the majority of university employees supported a restrictive non-smoking policy. Acceptance among active smokers was significantly lower, but even so, more than half of the employees who smoked were in favour. However, there was not enough support for a total smoking ban. Smoking prohibition with the provision of smoking areas was the option preferred by the majority of employees.

Lack of compliance and the presence of persistent smokers were seen as potential obstacles for the implementation of a non-smoking policy. Different solutions have been identified. The provision of smoking areas could help in the transition of becoming smoke-free. It also shows understanding towards the needs of the smoker. A group of people have been identified to be responsible for the policy reinforcement. As for the implementation process, an information-driven decision-

making model was proposed. Based on the measures preferred by the employees a policy was presented to the vice-chancellor's office. For its part, this office formalised the policy, informed all employees, and ensured compliance.

The third objective of this study was to evaluate the current situation in relation to smoking prevalence and attitudes towards smoking cessation in a university in Spain. Survey results suggested that a quarter of university employees of the University of Navarre smoked. Most of them had minimal level of nicotine dependence. The application of the transtheoretical model of change to the sample under study suggested that the majority of smokers at the University were not considering quitting in the near future. Education campaigns about the risks associated with smoking and the benefits of quitting could encourage smokers to move towards more active stages of change. Self-help materials and brief interventions were used to increase self-efficacy among those smokers who are seriously thinking about stopping.

Smokers in this study have said that they sometimes feel both guilty discriminated against. One should not forget that it is the smoker truly who is the victim, suffering the addiction and the double effect of active and passive smoking. When implementing restrictions it is important to send a clear message that the real problem is the smoke, not the smoker. This is in accordance with the WHO (2002) approach which does not encourage "persecution of smokers," but favours a fair provision of healthy environments to safeguard the health and safety of employees, regardless their smoking status.

Finally, this thesis aimed to design and implement a non-smoking policy founded on research evidence. Based on the results presented in this study a non-smoking policy has been implemented at the University of Navarre, changing the daily lives and possibly the health of 1,900 university employees and 12,000 students. Some lessons may be learned from the implementation process. Firstly, support from upper management is essential to the implementation success. Secondly, the appropriate media channels should be used to developing strategies to create awareness among subgroup of individuals at different levels of stages. Internet and e-mail have proved

to be an effective way to provide and collect information, while holding conferences to promote awareness has not been as successful. Finally, continuous effort is needed to improve compliance and identify areas for improvement.

The project presented here has prepared the ground for a smooth transition and can be an example for other workplaces and educational institutions in Spain and worldwide to comply with the new WHO resolutions (WHO, 2003b). The evidence presented confirms the feasibility of implementing non-smoking policies in academic settings, with little with little negative side effects and with wide consensus. It is important to recognise that smoking is not entirely a matter of free choice because nicotine is an addictive drug. Employers have the responsibility to offer support and help for smokers trying to quit. The knowledge of factors such as level of motivation, stage of readiness to change, and degree of nicotine dependence can be used to tailor programmes to suit the needs of different groups of smokers.

9.3. AREAS FOR FURTHER RESEARCH

Following the investigations described in this thesis, a number of projects are being taken up. An initial evaluation of the new policy is being done one year after the implementation. A survey is being carried out to assess the impact of the policy on smoking behaviour at work, awareness about the smoke-free policy, changes in attitudes, changes in smoking prevalence rates, and stages of change.

Also recommended are ongoing assessments of tobacco education and smoking cessation programs. Smoking cessation will be confirmed with biological tests (e.g. cotinine urine). This will increase the validity of the results. The one-year-after evaluation will collect intermediate outcomes such as movements through one stage of change. However, one should take into account that significant reductions in overall smoking prevalence may take longer to manifest themselves. As Cummings explains, community tobacco control initiatives need a time frame for evaluation of years while the time required to bring social change may be decades (Cummings, 2000).

Environmental tobacco measurements have been taken in similar conditions to evaluate if levels of contamination have reduced significantly. Direct observations of compliance with restrictions will be registered in the different locations at the University and cigarette butts in the non-smoking areas will be recorded as a sign of non-compliance.

Another project has already been initiated to train nursing and medicine students to become health agents for change helping other students to quit. However, the policy impact on students still needs to be investigated. One of the perceived benefits of the non-smoking policy was that it might help students to quit and to prevent some of them from taking up the habit. This hypothesis needs to be tested.

Ideally, the University should go completely smoke-free in the near future. Previous studies have shown that observation of the rules is highest when a total ban is in place (Mizoue *et al.*, 1999). Future evaluations should therefore investigate changes in acceptance for a total ban and implement more restrictions once employees are ready for them.

Every eight seconds someone dies as a result of tobacco. Changing smoking behaviour requires multiple approaches. Smoking restrictions are essential parts of the tobacco control puzzle. There will be an enormous public health impact if tobacco consumption is eliminated from workplaces and universities world-wide.

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Appendices

Appendix 1

Spanish legislation on Tobacco control.

Available from: http://www5.who.int/tobacco/page.cfm?sid=57

Crown Decree No. 1100 of 12 of May 1978 regulating advertising for tobacco and alcoholic beverages by State broadcasting media
Source: IDHL, 1978, 29(4):817

Crown Decree No. 1259 of 4 April 1979 on the designation of cigarette products as "low-nicotine" and "low-tar"
Source: IDHL, 1981, 32(4):732
Comment: The expression "low nicotine" may be used in connection with the marketing and advertising of cigarettes only if the nicotine yield of one cigarette is less than 1 mg, while the expression "low tar" maybe used only if the tar yield of one cigarette is less than 16 mg; requires sample of all cigarette products to be submitted to government authority and allows the government to pull those from market which do not comply the standards.

Order of 23 of May 1980 approving the technological standards necessary to perform the chemical analysis of cigarette products as referred to in Crown Decree No. 1259 of 4 April 1979
Source: IDHL, 1981, 32(4):732-733
Comment: Low tar and low nicotine cigarettes may only be advertised as such when authorised by the government authority; requires submission of sample of tobacco products to authorities for analysis of tar and nicotine levels and allows for removal of any tobacco product not in compliance.

Crown Decree No. 709/1982 of 5 of March 1982 regulating the advertising and use of tobacco
Source: IDHL, 1985, 36(2): 403-404, BASP (1994)
Comment: Bans smoking in health care facilities and on public transportation; informational advertising of new tobacco products with low tar and nicotine contents is permitted for two years following their introduction; bans all advertising of tobacco through public information channels (television and radio); requires a health warning on packs of tobacco for sale on the domestic market; forbids sale of tobacco to those under 16 years of age; prohibits new tobacco products with more than 24 mg of tar and 1.8 mg of nicotine from introduction in the market; requires a smoking area in indoor public establishments

Law No. 26 of 19 of July 1984, Law No. 14 of 25 April 1986 and Royal Decree 510/1992 of 14 of May 1992 (all addressing smoking in public places)
Source: BASP (1994) USDA
Comment: The rights of non-smokers are formally recognised under Spanish law which states that the right to health of the non-smoker always precedes the right of

smokers to smoke; bans smoking (except in designated areas) in welfare establishments for children under 16, health centres, educational establishments, public administration premises to which the public has direct access, premises were food is prepared, exhibition halls, reading rooms, enclosed commercial premises, theatres, cinemas, sports halls, lifts, urban and long distance vehicles and means of collective transport admitting standing passengers, school transport, medical transport, domestic flights less than 90 minutes, and workplaces with industrial contaminants or pregnant women.

Crown Decree No. 192/1988 of 4 March 1988 laying down restrictions on the sale of tobacco, for the protection of the health of the population

Source: IDHL; 1988, 39 (3): 653-656, BASP (1994)

Comment: Requires rotating health warnings and the display of the tar and nicotine contents on cigarette packs; from 1993, the maximum nicotine content is 1.3 mg; cigarettes classified as "low nicotine and tar", including "light", "mild" or similar designations must meet specific standards; smoking is not permitted in welfare centres for youth, health centres, teaching centres, areas of public administration to which public has direct access, halls for use in general public, theatres, cinemas, on all urban and long-distance vehicles for collective transport, and in any place where a greater risk to the health of workers exists through the combination of harm caused by tobacco and industrial contamination; prohibits smoking in any area where pregnant women work; bans oral smokeless tobacco; posters reminding of the ban on sales to children have to be places in tobacconist shops; forbids sale of tobacco products in health establishments, educational establishments, and those intended for care of children; products may be sold from automatic vending machines only on enclosed premises and the machine must display a health warning

Order of 8 June 1988 for the implementation of Crown decree No. 192/1988 laying down restrictions on the sale of tobacco, for the protection of the health of the population

Source; IDHL, 1989, 40(3): 603

Comment: signs and warnings to designate non-smoking areas must be visible and intelligible in design and format; requires nicotine and tar content to be stated on packs of cigarettes marketed in Spain.

Accord between the Tobacco Manufacturers' Association and the Ministry of Health, March 1988 (effective September 1988)

Source: BASP (1994), ERC (1999)

Comment: Bans tobacco advertising on television; permits radio advertising between 2200and 0800: limits press and billboard advertising; prohibits distribution of free cigarette samples.

Update to industry advertising agreement

Source: ERC (1999)

Comment: Pictures on cigarette packs in advertisements should show the product's tar and nicotine content; no smoking in tobacco products ads; models should not be under 25; ads must not emphasise success in sports or business

Order of 7 November 1989 prohibiting the sale and distribution of tobacco and alcoholic beverages in public educational centres under the Ministry of Education and Science
Source: IDHL; 1991, 42 (2): 479-480, USDA
Comment: Directs the provincial departments of the Ministry to adopt measures necessary to implement this order; tobacco products may be sold from automatic vending machines only on enclosing premises, and the machine is to display a health warning; prohibits the sale or supply of tobacco products to persons under 16 years of age.

Royal Decrees 510/1992 of 14 of May 1992
Source: BASP (1994)
Comment: Implements EC Directives 90/239, and respects the minimum standards

Royal Decrees 310/1992 of 14 of May and Royal Decree 1185/1994 of 3 June 1994
Source: BASP (1994)
Comment: Implements EC Directives 89/622 and 92/41, and respects the minimum standards

Agreement of Self-regulation by the Tobacco Manufacturers Association to replace 1988 Accord, Spring 1995.
Source: ERC (1999)
Comments: Prohibits advertising in cinemas or billboards and bus shelters which are situated less that 200 meters away from schools or colleges.

Code of Self- regulation for Tobacco Product Advertising in Spain (approval date 1 December 1988, effective date January 1999)
Source: TMA (1999)
Comment: Advertising of tobacco products shall not be conducted on television, or in video or audio tapes sold or rented to the public, conducted in publications whose policy is primarily addressed to minors under the age of 18, conducted in cinemas showing films intended expressly for and attended mainly by young people under 18 years old (all others must display a health warning), conducted on posters, billboards and other large public display media located with less than 200 metres from the entrances to schools and other educational centres; product promotion and promotional articles shall not be addressed to persons under the age of 18, nor shall tobacco product promotion be carried on at events especially addressed to persons under the age of 18; printed communication matter regarding tobacco products published hereafter shall conform the advertising provisions of this Code and shall include the health warning, and, in the case of cigarettes, the tar and nicotine content; all sampling, coupons, contests, direct mail advertising, prizes and brand-switching activity shall be addressed solely to adult consumers who declare they are smokers.

Iberia and Spanair Smoking Ban (7 November 1999)
Source: ERC (1999)
Comment: Bans smoking on all North Atlantic, Intra-Europe and Intra-Spain flights; the only Flights where smoking remains allowed are between Spain and Buenos Aires, Rio de Janeiro, and Sao Paulo and between Spain and Cuba

Appendix 2

University of Navarre | *Healthy University Project*

Questionnaire

This questionnaire has been developed to measure:

a) Smoking prevalence among the staff of the University of Navarre
b) Staff's attitudes towards active and passive smoking,
c) The degree of exposure to environmental tobacco smoke at work and at home experienced by employees
d) Employees' attitudes towards a future non-smoking policy to be implemented in the university.
e) Which are the smoking cessation activities employees would like to have access to at the university.

This questionnaire will take you not more than 15 minutes to complete. It is very important that you complete this questionnaire so that we can include as many viewpoints as possible when planning future services. **Any information you provide will be treated as strictly confidential.**

SECTION : SOCIO-DEMOGRAPHIC DATA

1. Gender: ☐ Male ☐ Female **QUESTIONNAIRE CODE:** ☐☐☐☐

2. Date of birth: .....day/.....month/.....year

3. Marital status:
☐ Single ☐ Married ☐ Widow ☐ Separated ☐ Other

4. How many people live in your house, including yourself?
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐10 or more

5. No. of children
☐ None ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐10 o more

6. Please, indicate which is the highest level of studies that you have completed
☐ Basic studies, write and read
☐ Primary education
☐ Secondary education
☐ University diploma
☐ University Degree
☐ Masters
☐ PhD

7. Which type of job do you do at the University?

Academic
☐ Reader
☐ Senior lecturer
☐ Lecturer
☐ Associate Lecturer
☐ P.E.I.C
☐ researcher
☐ Assistant lecturer
☐ Other

Administration and services
☐ Management
☐ IT
☐ Administration
☐ Library
☐ Estates and Buildings
☐ Cleaning
☐ Security
☐ Other

8. To which faculty, school, or institute do you belong?
☐ Architecture
☐ Sciences
☐ Nursing
☐ Medicine
☐ Pharmacy
☐ Finance and Business
☐ Journalism
☐ Law
☐ Classics
☐ Theology
☐ Arts
☐ Physics
☐ Languages
☐ ICT
☐ Other

SECTION 2: SMOKING

9. Have you smoked 100 cigarettes or more in your life?
☐ Yes ☐ No

10. Are you currently a smoker?
☐ Yes, I currently smoke
☐ No, I quit within the last 6 months
☐ No, I quit more than 6 months ago

Environmental Tobacco Smoke Exposure.

11. How many people smoke in your house?
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 or more

12. Please select the number of hours you were regularly exposed to second hand smoke at home per day on average, during the last month:

☐ I've never been exposed at home	Hours exposed
Wife/Husband smoker	☐ <1 h ☐ 1-2 h ☐ 3-5 h ☐ 6-9 h ☐ +10h
Other smokers at home	☐ <1 h ☐ 1-2 h ☐ 3-5 h ☐ 6-9 h ☐ +10h

13. Do you share your office with other workers?
☐ No, I have my own office
☐ Yes, I share with other people
☐ No, I don't work in an office or a closed environment

If yes, how many people work in your office?
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐10 or more

14. How many people in your office smoke, including yourself (if you are a smoker)?
☐ 0 ☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7 ☐8 ☐9 ☐10 or more

15. Please select the number of hours you were regularly exposed to second hand smoke per day on average during the last month:

☐ I am not regularly exposed at work	Hours exposed
Only one colleague smokes in the same room	☐ <1 h ☐ 1-2 h ☐ 3-5 h ☐ 6-9 h ☐ +10h
Several colleagues smoke in the same room	☐ <1 h ☐ 1-2 h ☐ 3-5 h ☐ 6-9 h ☐ +10h

16. How smoky do you think your workplace is?
☐ Extremely ☐ Very ☐ Somewhat ☐ Slightly ☐ Not at all

Attitudes about smoking at the workplace

17. Please select how often are you in the following situations?

	Always	Very often	Often	Sometimes	Never
I am bothered by tobacco smoke at university	5	4	3	2	1
How often do you find tobacco smoke a nuisance at:					
Your office	5	4	3	2	1
Meeting rooms	5	4	3	2	1
Cafeterias	5	4	3	2	1
Corridors/vestibules	5	4	3	2	1
Lifts	5	4	3	2	1
Break areas	5	4	3	2	1
Toilets	5	4	3	2	1

18. Please indicate whether or not you AGREE with each of these statements

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
Being exposed to cigarette smoking at work is harmful to my health	5	4	3	2	1
Working in a smoky environment increases the chance of getting cancer for non-smokers	5	4	3	2	1
Passive smoking at work is a serious problem for me	5	4	3	2	1

Attitudes about having a Smoke-free University

19. Would you accept a more restrictive policy than the current university policy?
☐ Yes ☐ No

20. The following table presents different types of non-smoking policies. Which one do you find more appropiate to implement at the University of Navarre?

Option 1: "Employees come to agreements about where and when smoking is allowed"	☐
Option 2: "Smoking should be prohibited in public places and corridors" "Employees should not be allowed to smoke during conferences and other meetings"	☐
Option 3: "Smoking should not be allowed anywhere in our workplace, except in designated smoking areas"	☐
Option 4: "Smoking should be prohibited on all university premises, without exceptions"	☐

21.How do you feel about the following statements?:

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
I would like this university to become smoke-free	5	4	3	2	1
A smoke free policy would be impossible to enforce	5	4	3	2	1
A smoking policy at our university is a good idea	5	4	3	2	1
Smoking prohibition is unfair to smokers	5	4	3	2	1
A ban on smoking would help smokers to stop smoking	5	4	3	2	1

22. Smoking cessation programmes at the university would be:

☐ Very helpful ☐ Helpful ☐ Not very helpful

23. Would you advocate smoking restrictions in:

Your office	☐ Yes	☐ No
Meeting rooms	☐ Yes	☐ No
Cafeterias	☐ Yes	☐ No
Corridors	☐ Yes	☐ No
Lifts	☐ Yes	☐ No
Rest areas	☐ Yes	☐ No
All places	☐ Yes	☐ No

Other (please specify) .....

24. Would you accept an invitation to share your opinion about these matters together with other employees in an informal meeting?

☐ Yes ☐No

If you are NOT A SMOKER you have already finished the questionnaire

THANKS FOR YOUR HELP

Please send to:
Mª José Duaso
Escuela Universitaria de Enfermería
Edificio de Ciencias
Universidad de Navarra

SECTION 3: FOR SMOKERS ONLY

25. Do you smoke (please tick all that apply)
☐ Cigarettes ☐ Cigars ☐ Pipe

At which age did you start to smoke daily?
At .....

26. How much do you smoke?
Cigarettes.....per day Cigars..... per week Pipes..... per week

27. How soon after you wake up do you smoke your first cigarette?
☐ Within 5 minutes
☐ 6 to 30 minutes
☐ 31 to 60 minutes
☐ More than 60 minutes

28. Do you find it difficult to refrain from smoking in places where it is forbidden (e.g., in hospital, in a library or in a movie theatre)?
☐ Yes ☐ No

29. Which cigarette would you most hate to give up?
☐ The first one of the day
☐ Any other cigarette

30. Do you smoke more frequently during the first hours after waking than during the rest of the day?
☐ Yes ☐ No

31. Do you smoke even when you are so ill that you are in bed most of the time?
☐ Yes ☐ No

32. How many cigarettes do you smoke at work each day?
☐ 1 to 4
☐ 5 to 10
☐ 11 to 20
☐ 21 to 30
☐ 31 or more

33. Where in your workplace do you usually smoke? (please select more than one if applicable)
☐ Your office ☐ Lifts
☐ Meeting rooms ☐ Rest areas
☐ Cafeterias ☐ Toilets
☐ Corridors ☐ Everywhere

34. Please indicate whether or not you AGREE with each of these statements

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
The people I work with don't mind being around smoke	5	4	3	2	1
Smoking at work has become socially unacceptable	5	4	3	2	1

35. How many colleagues of yours have encouraged you to quit?
☐ None ☐ One ☐ More than one

Intention to quit

36. Have you ever quit smoking for at least 24h?

☐ Yes ☐ No → If you have never tried to quit go to question 39, please

37. If yes, did you do so in the past year?

☐ Yes ☐ No

38. Did you maintain abstinence for 3 months before relapsing?

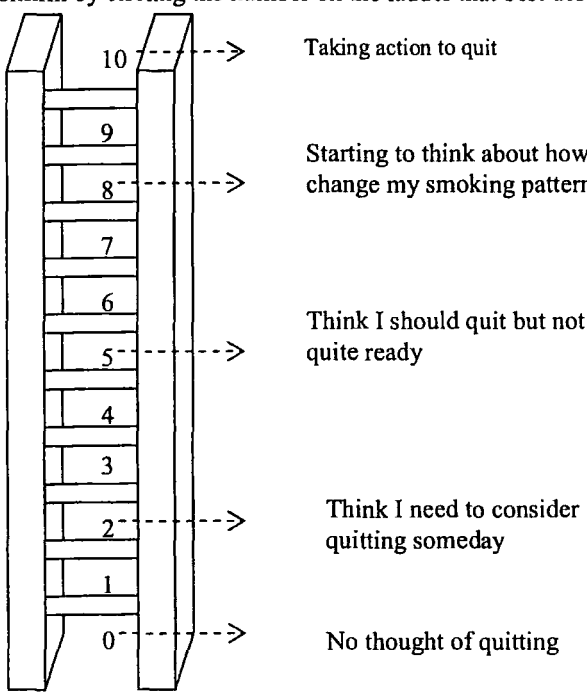
☐ Yes ☐ No

39. Are you seriously thinking of quitting smoking?

☐ Yes, within the next 30 days
☐ Yes, within the next 6 months
☐ No, not thinking of quitting

40. Contemplation Ladder Scale:

On the ladder below, each rung represents where various smokers are in their thinking about quitting. Can you confirm by circling the number on the ladder that best describes your intention to quit?



41. Attitudes toward smoking

Please indicate whether or not you AGREE with each of these statements

	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
1. Smoking is harmful to my health	5	4	3	2	1
2. I spend too much money on cigarettes	5	4	3	2	1
3. Second-hand smoke is dangerous to those around me	5	4	3	2	1
4. It bothers me to depend on cigarettes	5	4	3	2	1
5. Smoking gives me bad breath	5	4	3	2	1
6. Smoking is ruining my health	5	4	3	2	1
7. My cigarette smoke bothers other people a great deal	5	4	3	2	1
8. Smoking is bad for my skin	5	4	3	2	1
9. I would have more energy if I did not smoke	5	4	3	2	1
10. My cigarette smokes leaves an unpleasant smell	5	4	3	2	1
11. I fear that quitting smoking will make me gain weight	5	4	3	2	1

42. The following experiences can affect the smoking habits of some people. Think of any similar experiences you may be currently having or have had in the last month. Then rate the FREQUENCY of this event on the following five point scale:

	Repeatedly	Often	Occasionally	Seldom	Never
1. When I am tempted to smoke I think about something else.	5	4	3	2	1
2. I tell myself I can quit if I want to.	5	4	3	2	1
3. I notice that non-smokers are asserting their rights.	5	4	3	2	1
4. I recall information people have given me on the benefits of quitting smoking.	5	4	3	2	1
5. I can expect to be rewarded by others if I don't smoke.	5	4	3	2	1
6. I stop to think that smoking is polluting the environment.	5	4	3	2	1
7. Warnings about the health hazards of smoking move me emotionally.	5	4	3	2	1
8. I get upset when I think about my smoking.	5	4	3	2	1
9. I remove things from my home or place of work that remind me of smoking.	5	4	3	2	1
10. I have someone who listens when I need to talk about my smoking.	5	4	3	2	1
11. I think about information from articles and ads about how to stop smoking.	5	4	3	2	1
12. I consider the view that smoking can be harmful to the environment.	5	4	3	2	1
13. I tell myself that if I try hard enough I can keep from smoking.	5	4	3	2	1
14. I find society changing in ways that makes it easier for non-smokers.	5	4	3	2	1
15. My need for cigarettes makes me feel disappointed in myself.	5	4	3	2	1
16. I have someone I can count on when I'm having problems with smoking.	5	4	3	2	1
17. I do something else instead of smoking when I need to relax.	5	4	3	2	1
18. I react emotionally to warnings about smoking cigarettes.	5	4	3	2	1
19. I keep things around my home or place of work that remind me not to smoke.	5	4	3	2	1
20. I am rewarded by others if I don't smoke.	5	4	3	2	1

43. Listed below are situations that lead some people to smoke. We would like to know how tempted you may be to smoke in each situation. Please answer the following questions using the following five point scale:

	Extremely tempted	Very tempted	Moderately tempted	Not very tempted	Not at all tempted
1. With friends at a party.	5	4	3	2	1
2. When I first get up in the morning.	5	4	3	2	1
3. When I am very anxious and stressed.	5	4	3	2	1
4. Over coffee while talking and relaxing.	5	4	3	2	1
5. When I feel I need a lift.	5	4	3	2	1
6. When I am very angry about something or someone.	5	4	3	2	1
7. With my spouse or a close friend who is smoking.	5	4	3	2	1
8. When I realise I haven't smoked for a while.	5	4	3	2	1
9. When things are not going my way and I am frustrated.	5	4	3	2	1

44. The following statements represent different opinions about smoking. Please rate HOW IMPORTANT each statement is to your decision to smoke:

	Extremely important	Very important	Moderately important	Slightly important	Not important
1. Smoking cigarettes relieves tension.	5	4	3	2	1
2. I'm embarrassed to have to smoke.	5	4	3	2	1
3. Smoking helps me concentrate and do better work.	5	4	3	2	1
4. My cigarette smoking bothers other people.	5	4	3	2	1
5. I am relaxed and therefore more pleasant when smoking.	5	4	3	2	1
6. People think I'm foolish for ignoring the warnings about cigarette smoking.	5	4	3	2	1

45. The university is planning to provide smoking cessation activities to help those smokers who are willing to quit. Which of the following activities would you be interested?

- ☐ Self-help stop smoking booklets
- ☐ Brief one-to-one tobacco dependence treatment
- ☐ Intensive smoking cessation intervention
- ☐ Stop-smoking support groups
- ☐ Nicotine patch information
- ☐ Information about Bupropion (antidepressive drug used to help smokers to quit)
- ☐ Stop smoking program through e-mail
- ☐ Talks on tobacco-related issues
- ☐ Stop smoking hot-line
- ☐ None of them

THANKS FOR YOUR HELP

Please return to:
Mª José Duaso
Escuela Universitaria de Enfermería
Edificio de Ciencias
Universidad de Navarra

46. Do you have ☐ strong/ ☐ medium or ☐ low confidence in your ability to stop smoking at work if the ban were implemented?

Appendix 3

Back translation of the questionnaire

ORIGINAL VERSION	FIRST BACK TRANSLATION	EQUIVALENCE
Process of Change		
The following experiences can affect the smoking habits of some people. Think of any similar experiences you **may be currently having** or have had in the last month. Then rate the frequency of this event on the following five point scale: *Repeatedly* *Often* *Occasionally* *Seldom* *Never*	The following situations may affect the smoking habits of some people. Think about any similar experiences you may have had in the past month and mark how frequent each situation is using the scale below: *Repeatedly* *Often* *Occasionally* *Rarely* *Never*	**b**
1. When **I am tempted** to smoke I think about something else.	When **I have the urge** to smoke I think of something else.	**b**
2. I tell myself I can quit if I want to.	I tell myself that I can give up smoking if I want to.	a
3. I notice that non-smokers are asserting their rights.	I have noticed that non-smokers are defending their rights more strongly.	a
4. I recall information people have given me on the benefits of quitting smoking.	I remember the information that people have given me about giving up smoking..	a
5. I can expect to be rewarded by others if I don't smoke.	I could be rewarded by others if I don't smoke	a
6. I stop to think that smoking is polluting the environment.	I stop to consider that smoking is polluting my surroundings.	a
7. Warnings about the health hazards of smoking **move me emotionally.**	The warnings of how smoking damages my health **affect me.**	**b**
8. **I get upset** when I think about my smoking.	**I am concerned** when I think about my smoking habit.	**b**
9. I remove things from my home or place of work that remind me of smoking.	At home and at work I remove of all the objects that remind me of smoking.	a
10. I have someone who listens when I need to talk about my smoking.	I have somebody to listen to me when I need to talk about my smoking habit.	a
11. I think about information from articles and ads about how to stop smoking.	I think about the information in articles and adverts on how to stop smoking.	a
12. I consider the view that smoking can be harmful to the environment.	I bear in mind the opinion that smoking can be harmful for my surroundings.	a
13. I tell myself that if I try hard enough I can keep from smoking.	I tell myself that I can give up smoking if I really try.	a
14. I find society changing in ways that makes it easier for non-smokers.	I believe that society is changing and making things easier for non-smokers.	a
15. **My need** for cigarettes makes me feel disappointed in myself.	I am disappointed by **my dependence** on tobacco.	**b**
16. I have someone I can count on when I'm having problems with smoking.	I have someone I can turn to when I have problems with smoking.	a

17. I do something else instead of smoking when I need to relax.	When I need to relax I do something other than smoke.	a
18. I react emotionally to warnings about smoking cigarettes.	The warnings about smoking really affect me emotionally.	a
19. I keep things around my home or place of work that remind me not to smoke.	At home and at work I keep things around me which remind me not to smoke.	a
20. I am rewarded by others if I don't smoke.	I am rewarded by others if I don't smoke.	a

ORIGINAL VERSION	FIRST BACK TRANSLATION	EQUIVALENCE
Decisional balance		
The following statements represent different opinions about smoking. Please rate HOW IMPORTANT each statement is to your decision to smoke: ***Extremely important*** ***Very important*** ***Moderately important*** ***Slightly important*** ***Not important***	The following phrases represent different opinions about smoking. Please indicate how important each phrase is in your decision to smoke: ***Very Important*** ***Important*** ***Somewhat Important*** ***Not Very Important*** ***Not At All Important***	**b**
1. Smoking cigarettes **relieves tension.**	Smoking **frees me from stress.**	**b**
2. I'm **embarrassed** to have to smoke.	I am **ashamed** of having to smoke.	**b**
3. Smoking helps me concentrate and do better work.	Smoking helps me concentrate and do my job better.	a
4. My cigarette smoking bothers other people.	The smoke from my tobacco bothers other people.	a
5. I am relaxed and therefore more pleasant when smoking.	When I smoke I am more relaxed and so more pleasant.	a
6. People think I'm foolish for ignoring the warnings about cigarette smoking.	People think I am stupid/foolish for ignoring the warnings about smoking.	a
Self-efficacy / Situational Temptations		
Listed below are situations that lead some people to smoke. We would like to know how tempted you may be to smoke in each situation. Please answer the following questions using the following five point scale. ***Extremely tempted*** ***Very tempted*** ***Moderately tempted*** ***Not very tempted*** ***Not at all tempted.***	The following table lists the different situations which lead people to smoke. Please indicate how much you feel like smoking in the following situations: ***I really feel like smoking a lot*** ***I feel like smoking a lot*** ***I feel like smoking a little*** ***I don't feel like smoking very much*** ***I don't feel like smoking at all***	**b**
1. With friends at a party.	With friends at a party.	a
2. When I first get up in the morning.	As soon as I get up in the morning.	a
3. When I am **very** anxious and stressed.	When I feel anxious or under stress.	**b**
4. Over coffee while talking and relaxing.	Having a coffee chatting and relaxing.	a
5. When I feel I **need a lift.**	When I **need to cheer myself up.**	**b**
6. When I am very angry about something or someone.	When I am very angry because of something or with somebody.	a
7. With my spouse or close friend who is smoking.	When I am with my spouse or a good friend who is smoking.	a

8. When I realise I haven't smoked for a while.	When I realise that I haven't smoked for a while.	a
9. When things are not going my way and I am frustrated.	When things do not turn out as I want and I feel frustrated.	a
Contemplation Ladder Scale		
On the ladder below, each rung represents where various smokers are in their thinking about quitting. Can you confirm by circling the number on the ladder that best describes your intention to quit?	In the following scale, each step represents the different phases that smokers go through when they are in the process of giving up smoking. Please circle the number in the scale which best describes your present situation.	a
10. Taking action to quit.	I am taking measures to stop smoking.	a
8. Starting to think about how to change my smoking patterns.	I am beginning to think of how I can change my smoking habit.	a
5. Think I should quit but not quite ready.	I believe that I should quit but I am still not ready.	a
2. Think I need to consider quitting someday.	I believe that I should think about quitting some day.	a
0. No thought of quitting.	**I am not thinking of giving up.**	c

Appendix 4

Correspondence

School of Nursing
University of Navarre
31080 Pamplona, NAVARRE
Phone no. 948 42 56 00
Ext.: 6447-
e-mail: mjduaso@unav.es

Healthy University Project
UNIVERSITY OF NAVARRE
http://www.unav.es/enfermeria/UniversidadSaludable/proyecto.html

Mª José Duaso Ansó
BSc in Nursing
MA in Community Nursing

Pamplona, 16 March 2001

Dear Mr/Mrs (...),

A multidisciplinary group of employees at the University of Navarre have joined forces to start a project that will improve our environment: the ***Healthy University Project.***

Our main aim is to promote healthy lifestyles among university employees and students. We are starting with smoking because of its health impact.

We would like to know employees opinion before making decisions that could affect them. You have been randomly selected, together with other employees at the university, to answer the enclosed questionnaire.

All the information you provide will be treated as strictly confidential and will be analysed in a database that will not include your name. If you have any doubts you can call us at extension 6447.

Thank you for helping us to build a healthier university

Yours sincerely,

Mª José Duaso Ansó

School of Nursing
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31080 Pamplona, NAVARRE
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Healthy University Project
UNIVERSITY OF NAVARRE
http://www.unav.es/enfermeria/UniversidadSaludable/proyecto.html

Mª José Duaso Ansó
BSc in Nursing
MA in Community Nursing

Pamplona, 28 March 2001

Dear Mr/Mrs (...),

Two weeks ago we contacted you to introduce the ***Healthy University Project*** and invite you to take part .

We are aware that university employees are very busy, but we would be very grateful if you would take a few minutes of your time to fill in the enclosed questionnaire. It is very important to collect as many opinions as possible in order to plan future actions.

All the information you provide will be treated as strictly confidential and will be analysed in a database that will not include your name. If you have any doubts you can call us at extension 6447.

We would like to remind you that our aim is to build collaboratively a healthier environment. We look forward to your collaboration.

Yours sincerely,

Mª José Duaso Ansó

School of Nursing
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e-mail: mjduaso@unav.es

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http://www.unav.es/enfermeria/UniversidadSaludable/proyecto.html

Mª José Duaso Ansó
BSc in Nursing
MA in Community Nursing

Pamplona, April 2001

Dear Mr/Mrs (...),

We would like to thank your participation in the ***Healthy University Project***.

As part of our investigation to tailor future actions to the university community needs, we are planning to hold some meetings to explore employees attitudes towards passive and active smoking and opinions about a non-smoking policy at the university.

According to your answer to the questionnaire, you are willing to collaborate with us. We will contact you by phone in the near future to agree on a date and a time.

Due to methodological reasons, the meeting will be taped and transcribed. Tapes will be destroyed and transcripts will not include any participant's names.

We look forward to your collaboration.

Yours sincerely,

Mª José Duaso Ansó

Appendix 5

Focus group interview guide

Procedures: welcome participants. As they enter the room, invite them to take a seat. Offer coffee. Give each one a sign with his/her forename to put on the table.

Moderator: Good mooning. First of all we would like to thank you for joining us today.
My name is _____. Here with us today also is my colleague _____.

We know how busy you are. It is very kind of you to share your time with us. As I explained you in our last phone call, we have organised these meetings to complement the information gathered with the questionnaire.
The objectives of this meeting are:

- to investigate your opinions about a future non-smoking policy at the university
- to identify objections and possible solutions
- to understand smokers and non-smokers attitudes

We simply want to recall as many opinions and suggestions as possible that can help us.
Now, during the next hour, I will pose several questions – one at a time. I would like each of you to respond to each of the questions. You may add to the comments your colleagues make and feel free to discuss any comment or point made. There will be no right or wrong answers. Each participant is entitled to expressing his/her opinions. I request that only one person talk at a time so there is no confusion and we can all hear each other.

As it was explained to you, this conversation is going to be recorded for analysis purposes. We are taping the session because we don't want to miss any of your comments. My colleague will be taking some notes during the session, but he/she can't possibly write fast enough to get it all down. Tapes will be later transcribed but

transcriptions will never include any names. Tapes will be destroyed after transcriptions. In any case, and following the recommendations of the Ethical Research committee we ask you to sign this informed consent in which we state our compromise to deal with the data confidentially.

Questions

1. What is your experience as a smoker/non-smoker at the University of Navarre?
2. What do you think about passive smoking?
3. What do you think about the possibility of having non-smoking policy at the University of Navarre?
4. What kind of problems would you expect if a non-smoking policy was implemented?
5. What solutions would you suggest?

Appendix 6

English translation of the Ethics Committee's Approval
Research Project: "Healthy University Project."

Ms. Purificación de Castro, Doctor in Medicine and Secretary of the University of Navarra's Faculty of Medicine Ethics Committee,

CERTIFIES: that during the session hold the 12th of December 2000, the Committee examined the ethics aspects of the project: Healthy University, presented by Dr. Navidad Canga[1] as a main researcher.

After reviewing methodological aspects and considering that Dr. Navidad Canga has taking into account the Committee's comments on confidentiality, the Committee has accepted the project.

So that this may be officially recorded, I issue this certificate, in Pamplona, on the 12th of December 2000,

Purificación de Castro
Secretary.

---

[1] Dr. Navidad Canga was the main researcher in the grant proposal presented to the Navarre's Department of Health in order to obtain funding for the research.

Appendix 7

Focus group informed consent.

I _____ give my informed consent to participate in a group interview organised by the Healthy University Project.

The study has been explained to me and I understand what type of collaboration is required. I have been informed about confidentiality of the data obtained.

Signature and date

Appendix 8

Draft materials to present the *Healthy University Project*

un día sin tabaco

un día sin tabaco

corren
nuevos
vientos

corren
nuevos vientos

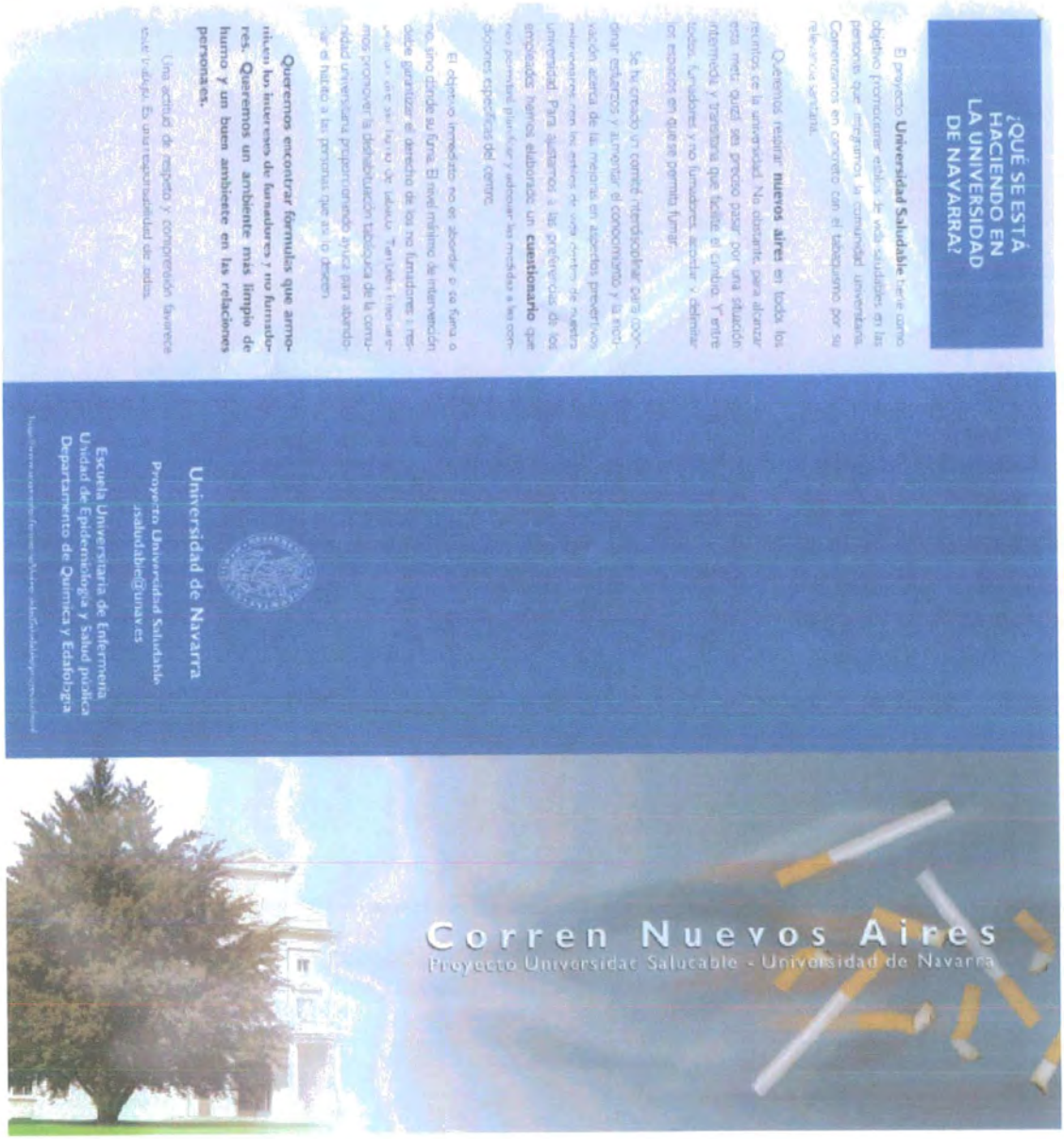

corren
nuevos vientos
un día sin tabaco
corren
nuevos vientos
un día sin tabaco


Corren Nuevos Aires


Corren Nuevos Aires
Proyecto Universidad Saludable - Universidad de Navarra

Appendix 9

Leaflet used to present the Healthy University Project



CORREN NUEVOS AIRES...

Fumar ya no es... de moda. Cada vez son más las personas que demandan trabajar/estudiar en ambientes sin humo procedente del tabaco, y también son cada vez más los que entienden y aceptan la necesidad de adoptar medidas que regulen su consumo en lugares de uso común, poniendo, a su vez, la creación de zonas para fumar.

Como centro docente tenemos una enorme responsabilidad y debemos esforzarnos en dar una buena formación, no solo en cuanto a conocimientos, sino también respecto a actitudes, hábitos y comportamientos.

De ahí la importancia de que respiremos aire limpio, que seamos una universidad sin humo como apuesta por la salud de los alumnos/alumnas y también de profesores, profesoras y personal no docente.

TABACO PASIVO

¿QUIÉN ES FUMADOR PASIVO?

El que, sin fumar voluntariamente, aspira el humo del tabaco por tener que permanecer un tiempo en ambientes o lugares donde fuman otras personas.

¿COMO AFECTA A LA SALUD?

Fumar no solo es perjudicial para el fumador... humo ambiental conlleva riesgos y molestias para... le rodean.

La exposición involuntaria de los no fumadores al humo del tabaco incrementa el riesgo de padecer cáncer de pulmón, otras enfermedades respiratorias (bronquitis, asma, sinusitis, alergias) y enfermedades cardiovasculares. También puede ocasionar un elevado número de síntomas como estornudos, irritación nasal, congestión ocular, dolor de cabeza y gripe, entre otros.

Los hijos de padres fumadores padecen con mayor frecuencia las siguientes patologías: alteraciones agudas de infecciones de oídos, crisis de dolor abdominal, muerte súbita del lactante, etc.

NORMAS, DERECHOS Y RESPETO

Aunque forma parte de las costumbres y gestos de cada día, fumar es una adicción. El establecimiento de normas que prohíban su consumo puede provocar rechazo por parte de los que fuman por la dificultad que puede suponer cumplirlas y también porque se pueden sentir presionados.

Las normas no pretenden la imposición y la prohibición, sino el fomento de un compromiso personal de respeto a la salud propia y de los demás, dejando las puertas abiertas para la búsqueda de soluciones a los conflictos que se puedan presentar.

El Real decreto 192/88, sobre limitaciones en la venta y el uso del tabaco para la protección de la salud de la población en su artículo 1, hace prevalecer el derecho a la salud de los no fumadores sobre el derecho de los fumadores a consumir labores de tabaco en aquellos lugares de uso común. Así mismo, establece la prohibición de fumar en los siguientes lugares, entre otros:

- **Centros docentes**
- Centros y servicios sanitarios
- Zonas de administración pública con atención al público
- Salas de exhibición, exposiciones y espectáculos
- Lugares donde trabajen mujeres embarazadas

Además, la ley establece, si es posible, la adecuación en esos lugares de espacios para fumar.

BENEFICIOS DE RESPETAR LOS ESPACIOS SIN HUMO

Todos los que formamos parte de la comunidad universitaria nos vamos a beneficiar directa o indirectamente de un ambiente sin humo:

- Se protege y mejora la salud de todos, respeta el derecho de los no fumadores a respirar aire limpio, estimulando a su vez a los fumadores a reducir el consumo o a dejar de fumar.
- Se crea un ambiente más agradable y basado en el respeto mutuo.
- Disminuyen las enfermedades y los accidentes (el riesgo de incendio, por ejemplo, se reduce en un 50%).
- Mejora la convivencia: evita situaciones que violentan las relaciones personales y potencia **la verdadera tolerancia.**
- Fortalece el mensaje de prevención y la credibilidad del «modelo ejemplar» de los educadores y profesionales de la salud.
- La Universidad estará más limpia al desaparecer las colillas y ceniza.
- Mejora la imagen pública que se transmite a la sociedad desde una universidad que se preocupa por la salud de sus empleados y estudiantes.
- Se contribuye a la promoción de una sociedad sin tabaco.

EL TABACO NOS HACE FUMADORES PASIVOS.

NO SEAMOS PASIVOS CON EL TABACO.

English translation

NEW AIR IS COMING...

Smoking is not fashionable anymore. The number of people who demand to work/study in smoke-free environments is increasing. Also, more and more people accept and support measures that control their consumption of tobacco and ask for the creation of smoking areas.

As an educational institution we have a huge responsibility to provide a good education not only in relation to knowledge but also in relation to habits and behaviours.

That is why it is so important to become a smoke-free University, protecting the health of students and of members of the staff.

PASSIVE SMOKING

WHO IS A PASSIVE SMOKER?

The non-smoker who inhales tobacco smoke because he or she has to stay at times in environments and places where other people smoke.

HOW DOES PASSIVE SMOKING AFFECT HEALTH?

Smoking not only damages smokers but also carries risks and annoyance for those who surround the smoker.

Involuntary exposure to tobacco smoke increases the risk of suffering from lung cancer and other respiratory diseases (bronchitis, sinusitis and allergy) and cardiovascular disease. It can also cause a wide range of symptoms such as sneezing, nasal irritation, eye congestion, as well as head and throat aches.

Smokers' children are more likely to suffer the above diseases and in addition, ear infections, abdominal pain and cot death.

NORMS, RIGHTS AND RESPECT

Although smoking has become part of everyday life, it is an addiction. The establishment of norms that control tobacco consumption can create rejection from the smoker due to the difficulty in complying with them and also because they might feel persecuted.

Norms do not intend imposition or prohibition but the promotion of a personal compromise with one's and other's health, leaving the door open for solutions to problems that might appear.

The Royal decree 192/88 about limitations on tobacco sales and consumption states that non-smokers' rights to breath clean air prevails over smokers rights' to smoke in public places. At the same time it establishes the prohibition to smoke in the following places, (among others):

- educational centres
- Health centres
- Customer service areas
- Libraries, museums and exhibitions
- Places where pregnant women work

BENEFITS OF SMOKE-FREE ENVIRONMENTS

We are all going to benefit directly or indirectly from having a smoke-free University:

- Smoke-free environments protect and improve everyone's health, non-smokers can breath clean air and smokers are encouraged to reduce their consumption or to quit.
- A friendlier environment is created based on reciprocal respect. Working relationships are improved, violent situations are reduced and **real tolerance** is promoted.

- Non-smoking policies reduce the risk of disease and accidents (for instance the risk of fire is reduced by 50%).
- The University will be cleaner.
- The preventative message and the credibility of the "role model" of health professionals is strengthened.
- The image the University projects to the public (caring for the health of students and staff) is improved.
- The policy contributes to the promotion of a smoke-free society.

WHAT IS BEING DONE AT THE UNIVERSITY OF NAVARRE?

The **Healthy University Project** aims to promote healthy lifestyles at the University. We have started with smoking because of its health impact.

We would like to have **new air** in all the University buildings. However, to achieve this goal it might be necessary to go through a transitory phase that facilitates change. All together, smokers and non-smokers, we need to agree and restrict areas where smoking will be permitted.

An interdisciplinary committee has been created to co-ordinate efforts and increase knowledge and motivation about improvements on healthy lifestyles within the University. To adjust measures to employees' preferences we have developed a **questionnaire** that will help us to plan and tailor measures to the University needs.

The immediate objective is not to decide whether to smoke but where to smoke. The minimum level of intervention should guarantee non-smokers' right to breath smoke-free air. We will also try to promote smoking cessation in the University community by providing smoking cessation aids to those who would like to receive them.

We would like to find solutions that suit smokers' and non-smokers' interest. We would like a cleaner environment and a good atmosphere among employees.

TOBACCO MAKES US PASSIVE SMOKERS. DON'T BE PASSIVE ABOUT TOBACCO

Appendix 10

Vice-chancellor office announcement of the non-smoking policy.

University of Navarre
Vice-chancellor office

INTERNAL COMUNICATION **n. ref. 527/2002**

Matter:

Current legislation regarding tobacco consumption establish that smoking is not permitted in health centres, educational establishments, libraries, and public administration premises to which the public has direct access.

Following the recommendations made by the Healthy University Project team, actions to reduce the impact of tobacco smoke on non-smokers will be taken.

As a first measure, from 31st of May onwards, smoking and non-smoking areas are will be designated in the cafeterias and different university buildings. Also in each building a smoking area will be established for smokers' use. Everywhere else, smoking will not be permitted apart from private offices (provided that they are not shared by a non-smoker and that students are not being attended to).

More information will be provided soon through the information campaign planned by the Healthy University Project.

Thanking you in advance for the collaboration to meet the objectives of this Project that will certainly benefit all university employees.

Please send this information to everyone accountable to your centre.

Pamplona, 12 April 2002

Appendix 11

Posters displayed at the university to present the project's results

Trabajando sin humo en la Universidad de Navarra: los empleados tienen mucho que decir...

PROYECTO UNIVERSIDAD SALUDABLE

- Durante el año 2001 se realizó un estudio con una **muestra representativa** de empleados del campus de Pamplona de la Universidad de Navarra, seleccionada al azar.
- En el estudio participaron 641 empleados de la Universidad. Respondieron un **70,4 %** de los encuestados.

OBJETIVOS:

Los principales **objetivos** de este estudio eran los siguientes:

- Evaluar la proporción de fumadores, las actitudes frente al tabaquismo y la exposición al humo ambiental en la Universidad de Navarra.
- Anticipar el impacto que puede tener una política de restricción del consumo de tabaco en la Universidad.
- Diseñar un protocolo para la implantación de una política de restricción del consumo de tabaco y ayuda en la cesación, de acuerdo con las necesidades de la comunidad universitaria.

Les presentamos un resumen de los principales resultados.

¿QUÉ CONOCEMOS SOBRE LOS EFECTOS DEL TABACO PASIVO?

El cuestionario *Universidad Saludable* también pretendía evaluar los conocimientos de los empleados sobre los efectos que para la salud entraña la exposición pasiva al humo de tabaco:

- El 90,8% de los que respondieron eran conscientes de que el humo de tabaco es perjudicial para su salud.
- El 57,6% sabían que trabajar en un ambiente con humo aumenta el riesgo de tener cáncer.

APOYO A UNA POLÍTICA MÁS RESTRICTIVA QUE LA ACTUAL

- Nuestros resultados sugieren que la mayoría de los empleados están a favor de una política no fumadora. Como era de esperar, existen diferencias significativas entre fumadores y no fumadores.
- **El 81,7% afirmaron que aceptarían una política más restrictiva que la actual prohibición en bibliotecas y aulas.** Esta proporción osciló desde el 59,2% en fumadores, hasta el 89,3% en no fumadores.
- A pesar de que el apoyo hacia una política no fumadora es menor entre los fumadores activos, no todos ellos tienen actitudes negativas hacia una futura política: el 50% cree que implementarla es una buena idea.

EXPOSICIÓN AL HUMO DE TABACO

De acuerdo con las respuestas al cuestionario *Universidad Saludable*

- El 40,4% de los empleados comparten su oficina con al menos 1 fumador.
- El 26% están expuestos más de 1 hora al humo de tabaco ambiental y el 19,5% más de 3 horas.
- El 25,7% consideran que hay humo en el lugar de trabajo.

MOLESTIAS POR EL HUMO EN LA UNIVERSIDAD

Se preguntó a los empleados con qué frecuencia se encuentran molestos a causa del humo de tabaco en la universidad. Estas fueron sus respuestas:

- El 46,1% de los empleados respondieron que el humo de tabaco dentro de la universidad les molesta *a veces*; mientras que un 24,2% refieren molestias *a menudo*.
- Las cafeterías y áreas de descanso fueron descritas como áreas en donde los empleados sienten molestias con mayor frecuencia.

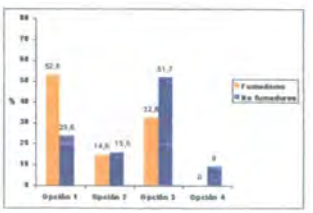
Molesto por el humo en la Universidad (%)

- Lugares de reunión	41,2	52,9	15,3	0,0	7,0
- Cafeterías	24,1	38,9	14,3	14,8	8,0
- Pasillos	45,3	29,2	8,8	8,9	8,1
- Áreas de descanso	43,2	39,2	8,7	5,9	10,1

LA MAYORÍA REFIERE QUE EL HUMO LES MOLESTA

MODALIDADES DE RESTRICCIÓN DEL CONSUMO DE TABACO

- **Opción 1.** Los empleados deben llegar a un acuerdo sobre dónde y cuándo está permitido fumar.
- **Opción 2.** Debería estar prohibido fumar en lugares públicos concurridos. Los empleados no deberían estar autorizados a fumar en las reuniones de trabajo.
- **Opción 3.** No debería estar permitido fumar en el lugar de trabajo, excepto en las áreas designadas a tal efecto.
- **Opción 4.** Debería estar prohibido fumar en toda la universidad, sin excepciones.



La **opción 3** fue la más elegida, por casi la mitad de los empleados

La Universidad de Navarra y el tabaco... en cifras

PROYECTO UNIVERSIDAD SALUDABLE: HACIA UNA VIDA MÁS SANA

- La principal razón para establecer actividades de promoción de salud en la universidad es **mejorar la salud de los empleados y los estudiantes**, reduciendo la exposición al humo ambiental de los no fumadores y facilitando la cesación tabáquica de los fumadores .
- Un objetivo importante para la implantación de estas actividades es **ayudar a aquellos que voluntariamente quieran dejar de fumar**. Este es el verdadero reto.
- El cuestionario *Universidad Saludable* valoraba diferentes aspectos relacionados con el tabaquismo (dependencia a la nicotina, actitud hacia el cambio, etc.). Contactamos por teléfono con los que no respondieron para valorar su estatus de fumador y así acercarnos a la prevalencia real de fumadores en nuestro entorno.
- Esta iniciativa ha sido patrocinada por los *Departamentos de Salud y Educación del Gobierno de Navarra* y por *FIUNA*.

ACTITUD HACIA EL CAMBIO

- Dejar de fumar no es un hecho puntual, sino todo un proceso por el que hay que pasar. De acuerdo con el *Test de Estadios de Cambio*, los fumadores que respondieron el cuestionario se encontraban en las siguientes fases:

• **59,6% Precontemplación.** La persona no es consciente del riesgo potencial que tiene una conducta insana para su salud y no considera ni reconoce la necesidad de cambiar su estilo de vida.

• **32,3% Contemplación.** La persona es consciente de los riesgos de la conducta y de los beneficios del cambio pero todavía no está preparada para tomar la decisión de cambiar.

• **8,1% Preparación.** La persona percibe que los beneficios de abandonar la conducta son superiores a los costes, y ve el cambio factible y útil. El individuo ya puede cambiar.

¿CUÁNTA GENTE FUMA EN NUESTRA UNIVERSIDAD?

- El número de fumadores, entre los empleados que respondieron, es del 25,7%. Es algo mayor la proporción en hombres (26,8%) que en mujeres (24,6%).

Con los datos de las llamadas telefónicas se estima que la prevalencia total puede acercarse al 27%.

- El 87,5% de los empleados que fuman lo hacen durante las horas de trabajo y el 54.1% fuman más de 5 cigarrillos al día.

DEPENDENCIA A LA NICOTINA

Utilizamos el *Test de Fagerström* para medir el grado de dependencia física al componente adictivo del tabaco: la nicotina.

- El 73,6% de los encuestados presentaban una dependencia baja, el 23,1% moderada y el 3,3% alta dependencia.

AYUDAS A LA CESACIÓN

- La naturaleza del hábito tabáquico, con su triple adicción (física, psicológica y social) puede afectar los esfuerzos de los fumadores para cumplir la futura política. Por ello, es importante establecer ayudas para la cesación.
- De acuerdo con nuestros resultados **el 40% de los fumadores desean abandonar el hábito tabáquico** y están especialmente interesados en recibir materiales de auto-ayuda (folletos, libros) para dejar de fumar, o un tratamiento breve y personalizado de deshabituación tabáquica.

Los empleados tienen interés en los métodos siguientes para dejar de

Proyecto Universidad Saludable
universidadsaludable@unav.es

Niveles de contaminación en la Universidad de Navarra

Humo de Tabaco Ambiental (HTA)

Proyecto "Universidad Saludable"

INTRODUCCIÓN

El humo de tabaco ambiental (HTA) es una mezcla compleja de contaminantes compuesta por al menos 3.000 compuestos químicos. La exposición al HTA supone un riesgo notable para la salud debido a su poder carcinógeno, afectando a las personas en las viviendas, en el lugar de trabajo y en los edificios de uso público.

Entre los diversos contaminantes generados por el consumo de tabaco son sin duda los hidrocarburos aromáticos y el material particulado los que representan un mayor riesgo para la salud. Entre los primeros destaca el benceno, contaminante tóxico y carcinogénico inductor de leucemias. Respecto al material particulado, sus efectos nocivos sobre la salud vienen determinados fundamentalmente por el diámetro de las mismas, siendo las de menor tamaño (10 µm y 2,5 µm) especialmente dañinas debido a su capacidad para ingresar en los alvéolos pulmonares.

En el presente trabajo se han determinado los niveles de benceno y de partículas (PM 10, 2,5 y 1) en diferentes dependencias de la Universidad (cafeterías y vestíbulos) como indicadores del grado de exposición del personal universitario al HTA.

¿ESTAMOS EXPUESTOS A BENCENO?

De acuerdo con la legislación vigente el límite de exposición de la población al benceno es de 5 µg m^{-3} como media anual. La aceptación de este valor es equivalente a la asunción de un riesgo de 22-37 casos de leucemia por cada millón de personas (riesgo "socialmente aceptable"). Teniendo en cuenta esas cifras, en nuestra Universidad, con aproximadamente 16.000 personas, el riesgo de padecer leucemia sería de 0,4-0,6 casos.

Los análisis efectuados durante una semana de muestreo en las distintas cafeterías (Fig. 1) muestran que todas ellas, exceptuando la número 5 , superan el límite de exposición fijado para el benceno. Si tenemos en cuenta que los niveles de contaminación registrados en las cafeterías son prácticamente constantes a lo largo del año, puede asegurarse que en los casos mencionados el límite anual se supera con claridad.

Los resultados obtenidos ponen de manifiesto la necesidad de reducir los niveles de contaminación registrados, medida especialmente importante para los camareros, que están expuestos a elevadas concentraciones de benceno durante largos periodos de tiempo.

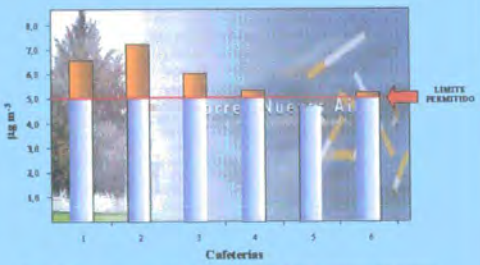


Figura 1. Concentraciones medias de benceno en las distintas cafeterías universitarias registradas durante una semana de muestreo

¿CUÁNTAS PARTÍCULAS INHALAMOS?

La legislación comunitaria relativa al material particulado entró en vigor en el año 2001, fijándose en 50 µg m^{-3} (periodo diario) y 40 µg m^{-3} (periodo anual) los valores límite para la protección de la salud humana.

Tal y como se aprecia en las Figuras 2 y 3 las concentraciones de partículas registradas, tanto en cafeterías como vestíbulos, superan ampliamente los valores límite recogidos en la legislación. El hecho es todavía más preocupante al comprobar que en varias dependencias incluso los niveles mínimos superan los límites establecidos.

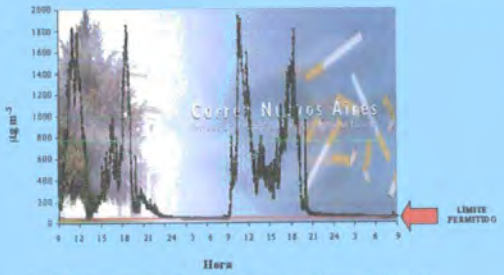


Figura 4. Concentraciones de PM10 en la cafetería nº 1 durante un periodo de 48 horas (época de máxima afluencia de alumnos)

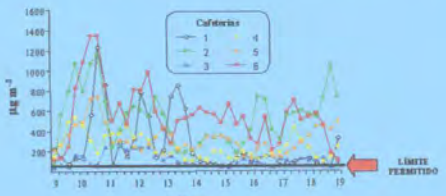


Figura 2. Concentraciones de PM10 en las distintas cafeterías universitarias. Las mediciones se han realizado en periodos de escasa afluencia de alumnos

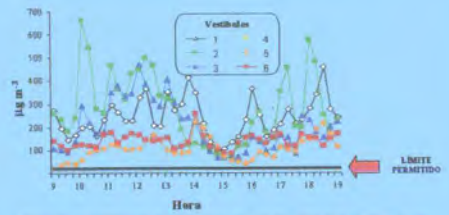


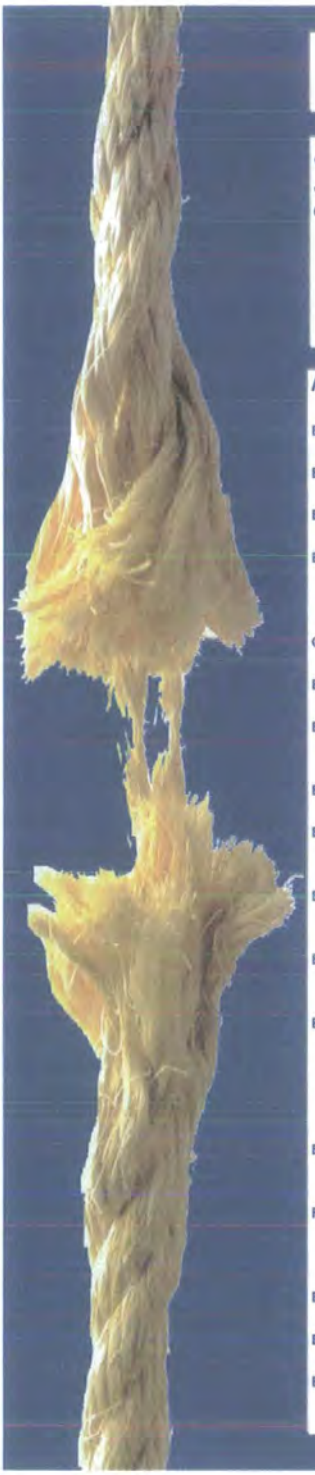
Figura 3. Concentraciones de PM10 en los distintos vestíbulos de la Universidad. Las mediciones se han realizado en periodos de escasa afluencia de alumnos

Aunque son diversas las fuentes emisoras de partículas, la contaminación observada es claramente atribuible al HTA. Según se aprecia en la Figura 4 los picos de concentración de partículas son coincidentes con los periodos de descanso (entre clases), mientras que los niveles más bajos corresponden a la noche.

Los resultados obtenidos muestran la importante situación de contaminación existente en todas las dependencias estudiadas, lo cual justifica la adopción de medidas urgentes encaminadas a reducir el nivel de exposición de la población al material particulado.

CONCLUSIONES

- **Los niveles de benceno que respiramos en la Universidad alcanzan concentraciones que resultan tóxicas para la salud.**
- **Las concentraciones de partículas contaminantes que inhalamos superan ampliamente los límites máximos.**
- **El HTA es actualmente el contaminante más extendido en ambientes interiores, suponiendo un grave riesgo para la salud.**
- **El tabaquismo en la Universidad produce niveles de contaminación perjudiciales para todos, incluyendo los no fumadores.**



TRABAJANDO SIN HUMO EN LA UNIVERSIDAD DE NAVARRA... ¿DONDE MEJOR?

¿SABÍA QUÉ? a partir del 31 de Mayo....

- **No se podrá fumar en ningún recinto de la Universidad de Navarra (UN) salvo en las áreas designadas a tal efecto que estarán correctamente señalizadas.**
  - En las zonas de atención al público en ningún caso se podrá fumar.
  - En los despachos personales se podrá fumar siempre que no se compartan con un no fumador, o se esté atendiendo a alguien.
  - Durante las reuniones no estará permitido fumar, aunque si son de larga duración (más de una hora) se puede prever un descanso para salir a fumar a las zonas permitidas.

ÁREAS RESERVADAS PARA FUMAR EN LOS EDIFICIOS

EDIFICIO DE CIENCIAS
- Cafetería: Zona de fumadores (lado del aparcamiento de Ciencias) y no fumadores

EDIFICIO LOS CASTAÑOS
- Pasillos zona de disección, bajando las escaleras entre los dos servicios

EDIFICIO DE INVESTIGACIÓN
- Descansillo del primer piso por las escaleras centrales donde se situaba la entrada del edificio, hoy cerrada

EDIFICIO BIBLIOTECA DE CIENCIAS
- Cafetería: Zona de fumadores y no fumadores
- Parte del pasillo del patio central que está lindando con el aula 04
- Sábados por la tarde y domingos los alumnos deberán salir al exterior del edificio

CIFA
- Pasillo exterior cubierto que comunica CIFA con zona de animales

EDIFICIO MUGA
- Patio exterior

EDIFICIO CENTRAL
- Cafetería: Zona de fumadores y no fumadores
- Vestíbulo en el lado derecho del edificio contiguo al patio central

EDIFICIO BIBLIOTECA DE HUMANIDADES
- Vestíbulos de la planta primera y segunda

EDIFICIO BIBLIOTECA NUEVA
- Vestíbulos de todas las plantas
- Cafetería: Zona de fumadores y no fumadores

EDIFICIO DE BIBLIOTECAS ENTRADA ESTE ECONOMICAS
- Planta baja: patio exterior
- Vestíbulos de la planta primera y segunda junto a las escaleras

EDIFICIO DE CIENCIAS SOCIALES
- En el vestíbulo de la entrada: se reservará la zona correspondiente a 5 bancos (los más cercanos a la cafetería)
- Cafetería: Zona de fumadores y no fumadores

EDIFICIO DE DERECHO
- Sótano
- Vestíbulo delante del oratorio
- Planta primera: Pasillo delante de la cafetería
- Planta segunda: Pasillo delante del aula 6
- Cafetería: Zona de fumadores y no fumadores

EDIFICIO ARQUITECTURA
- Cafetería: Zona de fumadores y no fumadores
- Pasillo lateral junto al Aula Magna (se habilitarán bancos)

FACULTADES ECLESIÁSTICAS
- Cafetería: Zona de fumadores y no fumadores
- Vestíbulo junto al salón de actos
- Primera planta: vestíbulo junto a las escaleras

EDIFICIO LOS NOGALES
- Patio exterior

EDIFICIO POLIDEPORTIVO
- No se podrá fumar en el edificio

EDIFICIO DE COMEDORES
- Comedor: Zona de fumadores y no fumadores
- Planta baja: Zona de encuentro

Appendix 12

Smoking cessation brochure

PROPÓSITO DE ESTE FOLLETO

El documento que tiene ahora mismo en sus manos le facilitará, de forma personalizada, el proceso de deshabituación tabáquica que usted quiere conseguir.

Este folleto detalla los beneficios que obtendrá si deja de fumar y le dará consejos útiles para que logre su objetivo.

Toda la información que se incluye se basa en evidencias científicas sobre cuáles son los métodos más efectivos para dejar de fumar. Además, contiene referencias donde encontrará más información sobre la materia.

DEJAR DE FUMAR SUPONE MUCHO ESFUERZO, PERO... USTED PUEDE CONSEGUIRLO. NO DEJE QUE SE ESFUME OTRO AÑO DE SU VIDA. INTÉNTELO.

1. LA NICOTINA: EL PODER DE UNA ADICCIÓN

La naturaleza del hábito tabáquico con su triple adicción *física, psicológica y social* hace que dejar de fumar requiera esfuerzo.

El poder de la nicotina, como droga adictiva, la convierte en la principal responsable del mantenimiento del hábito. Además, las circunstancias diarias que rodean la conducta de fumar (tomar café, estrés, olor y sabor del tabaco, manejar un cigarrillo entre los dedos o los labios, etc.) pueden comportarse como facilitadoras de la perpetuación del acto o incluso pueden evocar algunos de los efectos placenteros que la nicotina tiene sobre el organismo. Todo ésto lleva a la persona a reforzar su comportamiento como fumador.

Si ya ha intentado dejar de fumar alguna vez, se habrá dado cuenta que no es una tarea fácil, y generalmente las personas hacen 2 ó 3 intentos, o más, antes de conseguirlo. **Las recaídas no son un fracaso, sino una oportunidad para aprender de los errores y prepararse mejor para los próximos intentos.**

2.
LAS BUENAS RAZONES PARA DEJARLO

Dejar de fumar es una de las decisiones más importantes que un fumador puede tomar en su vida:

PARA SU SALUD

- Inmediatamente después de dejar de fumar su cuerpo comenzará a eliminar toxinas.
- A las 8 horas sus niveles de nicotina y monóxido de carbono en sangre se reducirán a la mitad.
- En el transcurso de 1-2 años el riesgo de infarto de miocardio disminuirá a la mitad, hasta desaparecer e igualarse al de un no fumador al cabo de más tiempo.
- El riesgo de cáncer de pulmón también se reducirá progresivamente hasta acercarse al de un no fumador, cuanto más tiempo esté sin fumar, más se reduce el riesgo.
- Sus pulmones se limpiarán, disminuirá su sensación de ahogo con el esfuerzo y mejorará su respiración y circulación sanguínea.
- Se acatarrará menos, estará menos tiempo enfermo.
- Sus hijos tendrán menos probabilidades de comenzar a fumar y de padecer ataques de asma, catarros o afecciones de garganta y oído.
- Si está embarazada, su bebé estará en mejores condiciones de tener un nacimiento e infancia saludable.

CALIDAD DE VIDA

- Mejorará su capacidad respiratoria.
- Mejorará su capacidad de ejercicio físico.

- Si tiene tos matutina irá desapareciendo en pocas semanas.
- Desaparecerán muchos dolores de cabeza.

SENSORIALES

- Mejorará su sentido del gusto y el olfato, lo que le permitirá disfrutar más de los placeres de la cocina y del aire libre.

ESTÉTICAS

- Desaparecerán las manchas amarillentas de dientes y dedos.
- Desaparecerá el mal aliento y el olor a tabaco de las ropas y del pelo.
- La piel mejorará su equilibrio y aspecto.

ECONÓMICAS

- Piense en el dinero que ahorrará.
Calcule cuánto ha gastado en tabaco en el último año.

SOCIALES

- Al dejar de fumar contribuirá a que su entorno familiar y laboral sea más saludable.
- Su familia y amigos podrán disfrutar de aire limpio.

PERSONALES

- Dejar de fumar es un gran logro personal. Se sentirá más satisfecho consigo mismo y tendrá la sensación de haber ganado en libertad.

3

3.
EFECTOS DEL TABACO SOBRE LA SALUD

Se han descrito más de 4.500 componentes tóxicos en el humo del tabaco y en una "pipada" existen unos 2 millones de moléculas altamente destructivas para la célula humana.

EL TABACO ES RESPONSABLE DE:

- El 85% de las muertes por cáncer de pulmón.

- El 90% de las muertes por asma y bronquitis crónica. Prácticamente todos los fumadores acaban teniendo enfisema.

- Produce enfermedades digestivas y diversos tipos de cáncer (vejiga urinaria, boca, faringe...), así como aumenta la frecuencia de padecer procesos crónicos (bronquitis...).

- Debido al tabaquismo pasivo, la población no fumadora tiene un riesgo aumentado de padecer cáncer de pulmón, enfermedades respiratorias y cardiovasculares, afectando con más frecuencia a la población infantil.

EL TABACO ES LA PRIMERA CAUSA DE MUERTE PREVENIBLE EN EL MUNDO, POR ENCIMA DEL SIDA O DE LOS ACCIDENTES DE TRÁFICO

4.
CINCO CLAVES PARA DEJAR DE FUMAR

Diversos estudios han demostrado que estas 5 claves le ayudarán a dejar de fumar de la mejor manera posible. Aumentarán sus posibilidades de éxito si las combina o utiliza todas juntas:

1. Prepárese
2. Consiga motivación y apoyo
3. Cambie su rutina y busque nuevas alternativas
4. Consiga tratamiento farmacológico y úselo de forma correcta
5. Prepárese para la recaída o las situaciones difíciles

PREPÁRESE

• Analice sus posibilidades de éxito. Compruebe si está preparado. Conozca su relación con el tabaco:

¿Tiene una dependencia física muy fuerte a la nicotina?

Aunque puede formar parte de las costumbres y gestos de cada día, fumar es una adicción. La nicotina es la sustancia del tabaco responsable de sus cualidades adictivas. Los cigarrillos son un vehículo ideal para liberar nicotina tardando sólo siete segundos en llegar al cerebro.

El Test de Fagerström está especialmente diseñado para medir el grado de dependencia física al componente adictivo del tabaco: la nicotina. También le permitirá conocer si es candidato para utilizar tratamiento con *Terapia Sustitituva de Nicotina*, como ayuda, para dejar de fumar.

Compruebe usted mismo cuál es su puntuación y sabrá qué grado de dependencia le produce el tabaco.

TEST DE FAGERSTRÖM

1. ¿Cuánto tiempo pasa desde que se levanta hasta que fuma su primer cigarrillo?

< 5 minutos	**3 puntos**
6-30 minutos	**2 puntos**
31-60 minutos	**1 punto**
> 60 minutos	**0 puntos**

2. ¿Encuentra difícil no fumar en los lugares donde está prohibido como la biblioteca o el cine?

Sí	**1 punto**
No	**0 puntos**

3. ¿Qué cigarrillo le cuesta más dejar de fumar?

El primero del día	**1 punto**
Cualquier otro	**0 puntos**

4. ¿Cuántos cigarrillos fuma cada día?

< 10	**0 puntos**
11-20	**1 punto**
21-30	**2 puntos**
>30	**3 puntos**

5. ¿Fuma con más frecuencia durante las primeras horas después de levantarse que durante el resto del día?

Sí	**1 punto**
No	**0 puntos**

6. ¿Fuma aunque esté tan enfermo que tenga que guardar cama la mayor parte del día?

Sí	**1 punto**
No	**0 puntos**

PUNTUACIÓN TOTAL

>7 puntos:dependencia alta
4 a 7 puntos: dependencia moderada
< 4 puntos : dependencia baja

En cualquier caso, sea cual sea su grado de adicción, dejar de fumar es posible y lo consiguen cada día en el mundo miles de personas

¿Está motivado para el cambio? ¿Está preparado para tomar la decisión de dejar de fumar? Identifique cual es su posición:

Precontemplación. Quizá usted no se haya parado a pensar en los riesgos que conlleva el tabaco para su salud. Ni siquiera ha contemplado la posibilidad de abandonar el hábito. Procúrese información.

Contemplación. Es consciente del riesgo del tabaco para su salud y de los beneficios del cambio, pero todavía no está preparado para cambiar. Contempla la posibilidad de abandonar el hábito en los próximos seis meses, pero no antes de un mes. No corra el riesgo de convertirse en *"contemplador crónico"* pensando continuamente en dejarlo y no pasando nunca a la acción.

Preparación. Percibe que los beneficios de abandonar el tabaco son superiores a los costes. Ya ve el cambio factible y útil y está muy próximo a acometerlo.

Acción. Enhorabuena por su decisión. Márquese objetivos claros y unos planes realistas. Busque apoyo social y otórguese alguna recompensa por mantenerse sin fumar. ¡Cuidado con las recaídas!

Mantenimiento. Tiene asumido que ha dejado de fumar y ya se mueve dentro de un estilo de vida saludable. ¡Cuidado!, todavía puede recaer.

Recaída. Una recaída no es un fracaso, le permitirá analizar qué ha pasado y aprender de sus errores. Ya tiene más posibilidades de abandonarlo definitivamente en sus próximos intentos.

- Fije una fecha
- Redacte una lista con:

Motivos por los que fuma	Razones por las que quiere dejarlo
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

7

CONSIGA MOTIVACIÓN Y APOYO

Diversos estudios han demostrado que sus probabilidades de dejar de fumar aumentan si usted obtiene ayuda. Puede buscar apoyo de muchas maneras:

• Cuente a sus amigos, familiares y compañeros de trabajo que va a dejar de fumar y que necesitará su ayuda. Pídales que no fumen a su alrededor o que no dejen cigarrillos a la vista.

• Dejar de fumar es más difícil cuando hay otro fumador en su casa. Anime a sus familiares y amigos a dejar de fumar al mismo tiempo o a no fumar en su presencia.

• Hable con su médico de familia o su enfermera/o y consiga apoyo individual o de grupo. Estos tratamientos aumentan la posibilidad de dejarlo.

CAMBIE DE RUTINA Y BUSQUE NUEVAS ALTERNATIVAS

• Cambie de rutina. Use otro camino distinto para ir al trabajo. Beba té en lugar de café. Cambie el menú del desayuno. Tome más frutas y verduras, beba mucha agua.

• Cambie su entorno. Deshágase de TODOS sus cigarrillos en casa, en el coche y en el trabajo.

• Evite que la gente fume en su casa.

• Recuerde, de su pasado, los intentos para dejar de fumar y piense qué funcionó y qué no.

• Una vez que lo haya dejado, no fume **¡NI UNA CALADA!**

• Intente distraerse cuando tenga ganas de fumar. Hable con alguien, salga a dar un paseo o busque una actividad que le

mantenga ocupado. Piense que el impulso por fumar dura pocos segundos y desaparece.

• Haga algo que le ayude a reducir su ansiedad. Tome un baño caliente, haga ejercicio o lea un buen libro.

• Premie su esfuerzo y planee algo agradable para cada día que pase sin fumar. No piense demasiado a largo plazo, concéntrese en un día más que ha conseguido estar sin fumar.

CONSIGA TRATAMIENTO Y ÚSELO DE FORMA CORRECTA

La *U.S. Food and Drug Administration* (FDA) ha aprobado 5 medicaciones para ayudar a dejar de fumar.

Es muy importante preguntar y pedir consejo a los profesionales de la salud para el uso de estos productos y leer atentamente la información del prospecto.

Las posibilidades de éxito se triplican si se ayuda de estos tratamientos farmacológicos.

• *Terapia Sustitutiva con Nicotina (TSN)*

No es otra cosa que la administración de nicotina por una vía distinta a la del consumo de cigarrillos y en una cantidad que sea suficiente para que disminuya la intensidad de algunos de los síntomas del síndrome de abstinencia y se reduzcan las ganas de fumar. La ventaja es que evitan el alquitrán, el monóxido de carbono y demás tóxicos procedentes del tabaco. Estos productos no suministran tanta cantidad de nicotina como la aportada por el tabaco, por lo que su uso racional no supone un riesgo para la salud.

Dependiendo de la vía de administración hay diferentes tipos: *chicles, parches, inhalador bucal, spray nasal*. Están disponibles en la farmacia *sin necesidad de receta*.

Deben utilizarse ***"en lugar del cigarrillo, no además de él"***

Se ha demostrado que la combinación del parche de nicotina con el chicle incrementa los índices de abstinencia a largo plazo respecto a los obtenidos con una única forma de TSN

- ***Hidrocloruro de bupropion de liberación prolongada***

Es un comprimido que no tiene nicotina. Actúa reduciendo el impulso por fumar y disminuyendo los síntomas del síndrome de abstinencia a la nicotina, tanto en número como en intensidad.

Sólo se puede utilizar con prescripción y vigilancia médica.

Estos productos no son una *"cura mágica"*. Para conseguir el éxito es preciso un esfuerzo y un compromiso personal. La elección del tratamiento depende de las características del usuario, poniendo especial atención en personas con contraindicaciones médicas, fumadores de menos de 10 cigarrillos/día, mujeres en periodo de gestación o lactancia y fumadores adolescentes.

PARA MÁS INFORMACIÓN CONSULTE EN SU CENTRO DE SALUD A SU MÉDICO O ENFERMERA/O

PREPÁRESE PARA LA RECAÍDA Y LAS SITUACIONES DIFÍCILES

La mayoría de las recaídas ocurren durante los primeros tres meses después de dejar de fumar. No se desanime si vuelve a fumar. Recuerde que la mayoría de las personas necesita intentarlo varias veces hasta que lo dejan con éxito.
Vigile las siguientes situaciones peligrosas:

- Alcohol: evite beber alcohol. La bebida disminuye sus probabilidades de éxito.

- Otros fumadores: estar rodeado de otros fumadores aumentará sus deseos de fumar.

- Mal humor o depresión: hay muchas otras maneras de mejorar el mal humor que fumando, ¿no cree?

5.
PREGUNTAS Y RESPUESTAS PARA PENSAR Y SOPESAR

"Fumar es una decisión mía personal que no afecta a nadie"

Esta idea no responde en absoluto a la realidad, el daño del tabaco pasivo ha sido constatado consistentemente en la literatura científica. La población no fumadora tiene un riesgo aumentado de padecer cáncer de pulmón y enfermedades respiratorias y circulatorias.

"Si me tengo que morir algún dia, ¿qué más me da vivir unos meses más como jubilado, si puedo disfrutar del tabaco hasta entonces?"

Se suele decir que el tabaco mata rápidamente, pero muchas veces lo que produce son enfermedades de larga duración que reducen considerablemente la calidad de vida. Además, no hablamos de reducción en algunos meses de vida, sino de 10-15 años.

"Cuando estoy estresado fumar me relaja"

El organismo del fumador depende de la nicotina por eso al obtenerla se relaja. Pero la nicotina es una droga estimulante que aumenta la frecuencia cardiaca, la presión arterial, y la adrenalina. Después de unas semanas, muchos fumadores están menos nerviosos y aprenden a relajarse sin fumar. Ejercen más el autocontrol.

"¿Cuánto tiempo dura el síndrome de abstinencia?"

El síndrome de abstinencia comienza a las 4-5 horas de abandonar el consumo de tabaco y persiste durante 8-10 semanas. Es de máxima intensidad durante la 1ª-4ª semana y se reduce ostensiblemente a partir de la sexta semana.

"Llevo muchos años fumando y no puedo dejarlo, lo que voy a hacer es reducir el número de cigarrillos"

Tanto los fumadores de larga duración como los que acaban de iniciarse en el hábito se beneficiarán al dejar de fumar.
Reducir el consumo es incluso más difícil que dejarlo. La persona tiende a inhalar más los cigarrillos y a la larga ir aumentando su número hasta llegar al consumo anterior.

"Si fumo cigarrillos bajos en nicotina y alquitrán, ¿también me perjudican?"

Con este tipo de cigarrillos se suele inhalar más profundamente para compensar su bajo contenido en nicotina, por lo que la absorción es similar.

"Si dejo de fumar, ¿engordaré?"

Algunas personas al dejar de fumar suelen incrementar un poco su peso (alrededor de 2 Kg), los cuales son fáciles de perder si se hace algún tipo de ejercicio físico. No intente dejar de fumar y someterse a un régimen dietético: fracasará. Tenga paciencia, ya perderá esos kilos. El beneficio de dejar de fumar supera los riesgos del aumento moderado del peso.

"Si dejo de fumar estaré más nervioso y no podré realizar las actividades de la vida diaria"

El síndrome de abstinencia tiene síntomas claros durante un período bien establecido. Pasado éste todo son beneficios. Contra la irritabilidad y nerviosismo puede utilizar técnicas de relajación como respirar profundamente llenando de aire los pulmones, retenerlo y expulsarlo concentrándose en lo que hace. *Superada la dependencia los fumadores ganan en autocontrol y están menos nerviosos que cuando fumaban.*

PARA MÁS INFORMACIÓN

Consulte estas páginas web:

http://www.atenciontabaquismo.com

http://www.cnpt.es

http://separ.es

http://www.unav.es/enfermeria/UniversidadSaludable/proyecto.html

Este libro ha ayudado a muchos fumadores a dejarlo:

Alenn Carr (2001) "*Es fácil dejar de fumar si sabes cómo*". Espasa Calpe: Madrid.

AGRADECIMIENTOS

Queremos expresar nuestro agradecimiento a las instituciones y a las personas que han colaborado con nosotros:

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Al Departamento de Salud del Gobierno de Navarra
A las ayudantes y alumnas internas del área de Comunitaria de la Escuela Universitaria de Enfermería de la Universidad de Navarra

Universidad de Navarra
Proyecto Universidad Saludable
Escuela Universitaria de Enfermería
Unidad de Epidemiología y Salud Pública

English translation

QUITTING SMOKING... Is not easy but you can do it with effort, compromise and support.

PURPOSE OF THIS LEAFLET

The handout you are holding right now will help you to quit smoking in a personalised way.

This leaflet explains the benefits you will obtain if you quit smoking and will give you useful advice to achieve your objective.

All the information included is based on scientific evidence about the most effective methods to quit smoking. Besides, it contains references where you can find more information on the topic.

QUITTING IS HARD WORK AND TAKES A LOT OF EFFORT, BUT YOU CAN DO IT. DON'T LET ANOTHER YEAR OF YOUR LIFE VANISH. TRY.

1. NICOTINE: A POWERFUL ADDICTION

The physical, psychological and social addictive nature of tobacco makes it hard to quit. Nicotine is a very addictive drug. For some people, it can be as addictive as heroin or cocaine. Furthermore the daily circumstances that accompany tobacco use (coffee, stress, smell, holding the cigarette) can elicit the same reinforcing events as nicotine and become triggers for consumption.

If you have tried to quit smoking, you know how hard it can be. Usually people make two or three attempts, or more, before finally being able to quit. **Relapse is not a failure, but an opportunity to learn about mistakes and better prepare for the next attempt.**

2. GOOD REASONS FOR QUITTING

Quitting smoking is one of the most important things you will ever do.

FOR YOUR HEALTH

- Immediately after quitting smoking your body will start to eliminate toxins.
- After 8 hours, nicotine and carbon monoxide level in blood will drop to half.
- In one to two years excess risk of coronary heart disease is half that of a smoker and will reduce to that of a non-smoker after a while.
- Lung cancer risk will also gradually reduce to became similar to non-smokers.
- Your lungs will be cleaner, shortness of breath after effort will be less and your breathing and circulation will improve.
- You will have fewer and shorter colds.
- The likelihood that your children smoke will be lower and will also reduce their risk to suffer asthma, colds and ear and throat infections.
- If you are pregnant, you will reduce the risk of premature birth, baby with low birth weight and miscarriage.

QUALITY OF LIFE

- Your breathing capacity will improve.
- Your energy will increase.
- If you have morning cough this will disappear in a few weeks.
- Many headaches will disappear.

SENSORY

- Your sense of smell and taste will improve, and therefore you will be able to enjoy eating and being in open spaces more than before.

COSMETIC

- The yellow stains from your teeth and fingers will disappear.
- The smell from your clothes and bad breath will disappear.
- The balance and appearance of your skin will improve.

FINANCIAL

- Think about the money you will save. Calculate how much money have you spent on tobacco in the last year .

SOCIAL

- When you stop smoking you will contribute to a healthier working and home environment.
- You family and friends will also be able to enjoy a cleaner environment.

PERSONAL

- Quitting smoking is a great personal achievement. You will feel satisfied with your self and win freedom

3. HEALTH EFFECTS OF TOBACCO

More than 4,500 toxic components have been found in tobacco smoke, in a puff there are about two million molecules highly destructive to the human cell.

Smoking is responsible for:

- 80% of lung cancer deaths.
- 90% of asthma and chronic bronchitis related deaths.
- It produces digestive diseases and different types of cancer (e.g. bladder, mouth, throat) and increases the risk of suffering chronic processes (e.g. bronchitis).
- Passive smokers, especially children, have a higher risk of suffering from lung cancer, respiratory and cardiovascular diseases.

SMOKING IS THE FIRST CAUSE OF PREVENTABLE DEATH IN THE WORLD, HIGHER THAN AIDS OR TRAFIC ACCIDENTS.

4. FIVE KEYS FOR QUITTING

Studies have shown that these five steps will help you quit and quit for good. You have the best chances of quitting if you use them together.

1. **Get ready.**
2. **Get support.**
3. **Learn new skills and behaviors.**
4. **Get medication and use it correctly.**
5. **Be prepared for relapse or difficult situations.**

GET READY

Analyse your chances of success. Check whether you are ready. Find out about your relationship with tobacco.

Do you have a strong physical dependence to nicotine?
Nicotine, the addictive substance in tobacco products, is a very powerful drug. Cigarettes are an ideal vehicle for nicotine delivery. Within seven seconds of inhaling on a cigarette, the nicotine reaches your brain.

The *The Fagerström Test for Nicotine Dependence (FTND)* is a 6-item scale designed to measure physical dependence on nicotine. I will also help you to find out whether you are a good candidate for nicotine replacement to help you quit smoking.

Check what your score is and find out about your degree of nicotine dependence.

1. How soon after you wake up do you smoke your first cigarette?

Within 5 minutes	3 points
6- 30 minutes	2 points
31-60 minutes	1 point
After 60 minutes	0 points

2. Do you find it difficult to refrain from smoking in places where it is forbidden (e.g., in church, in a library, or in a movie theatre)?

Yes	1 point
No	0 points

3. Which cigarette would you most hate to give up?

The first one in the morning	1 point
Any other cigarette	2 points

4. How many cigarettes do you smoke per day?

< 10	0 points
11-20	1 point
21-30	2 points
> 30	3points

5. Do you smoke more frequently during the first hours after waking than during the rest of the day?
Yes 1 point
No 0 point

6. Do you smoke even when you are so ill that you are in bed most of the day?
Yes 1 point
No 0 point

TOTAL SCORE
> 7 high dependence
4-7 medium dependence
< 4 low dependence

In any case and regardless of your degree of addiction, quitting smoking is possible and thousands of people around the world manage to quit every day.

Are you motivated to change? Are you ready to make the decision to quit? Identify your attitude:

Precontemplation. You are not seriously considering to quit. Maybe you have not thought carefully about the health risks of smoking. Try to find out more about the benefits of quitting.

Contemplation. You are aware about the health risks of smoking and the benefits of quitting but you are still not ready to change. You are considering the possibility of quitting during the next six months, but within one month. Be careful not to take the risk of becoming a "chronic contemplator" thinking continuously about quitting but not moving into action

Preparation .You realise the benefits of quitting outweigh the difficulties. You have realised quitting is possible and you are ready to try with the next month. Set yourself clear and achievable targets. Try to set a quit date

Action. Congratulations for your decision! Get social support from your family and friends. Give yourself a reward for not smoking. Be careful with relapse!

Maintenance. You have been a while without smoking and have come into terms with being an ex-smoker. Be careful there is still the risk of relapse.

Relapse. A relapse is not a complete failure. You can now analyse why it happened and learn from your mistakes. Next time you will be more likely to succeed.

- **Set a quit date.**

- Make a list

Reasons why I smoke	Reasons why I would like to quit
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

GET SUPPORT AND ENCOURAGEMENT

Studies have shown that you have a better chance of being successful if you have help. You can get support in many ways:

- Tell your family, friends, and co-workers that you are going to quit and want their support. Ask them not to smoke around you or leave cigarettes lying around.
- Quitting smoking is more difficult if you have smokers around. Try to encourage your family and friends to quit smoking at the same time or not to smoke around you.
- Talk to your health care provider (for example, doctor, dentist, nurse, or pharmacist). Get individual or group counselling. The more counselling you receive, the better your chances are of quitting.

CHANGE YOUR DAILY ROUTINE AND LEARN NEW SKILLS AND BEHAVIOURS

- When you first try to quit, change your routine. Use a different route to work. Drink tea instead of coffee. Have breakfast in a different place. Eat lots of fruits and vegetables and drink a lot of water.
- Change your environment. Get rid of **ALL** cigarettes and ashtrays in your home, car, and work place. Don't let people smoke in your home.
- Review your past attempts to quit. Think about what worked and what did not.
- Once you quit, don't smoke—**NOT EVEN A PUFF!**
- Try to distract yourself from urges to smoke. Talk to someone, go for a walk, or get busy with a task.
- Do something to reduce your stress. Take a hot bath, exercise, or read a book.
- Plan something enjoyable to do every day. Don't think too much in longer terms. Concentrate on each more day you have kept without smoking

GET MEDICATION AND USE IT CORRECTLY

Medication can help you to stop smoking and lessen the urge to smoke. The U.S. Food and Drug Administration (FDA) has approved five medications to help you quit smoking.
Ask your health care provider for advice and carefully read the information on the package.

All of these medications will more or less double your chances of quitting and quitting for good.

- **Nicotine Replacement Therapy (NRT)**

It is based on the administration of nicotine in a different way from smoking cigarettes and in a quantity sufficient to reduce abstinence syndrome and the urges to smoke.
These products do not supply as much nicotine as cigarettes and therefore do not constitute a health risk. The advantage is that you avoid tar, carbon monoxide and all the other toxic components of tobacco smoke.

There are several different types of nicotine replacement including nicotine gum, inhaler, nasal spray and patches. All of them are available on prescription and over the counter.
You should use them instead of the cigarette, not on top of it.

- **Bupropion SR**

This is a tablet that does not contain nicotine. Available on prescription, it reduces smoking urges and the number and intensity of abstinence symptoms.

These products are not a magic cure. Some effort and personal compromise are necessary to succeed.

If you are pregnant or trying to become pregnant, nursing, under 18, smoking fewer than 10 cigarettes per day, or have a medical condition, talk to your doctor or other health care provider before taking medication.

BE PREPARED FOR RELAPSE OR DIFFICULT SITUATIONS

Most relapses occur within the first 3 months after quitting. Don't be discouraged if you start smoking again. Remember, most people try several times before they finally quit. Here are some difficult situations to watch for:

- **Alcohol.** Avoid drinking alcohol. Drinking lowers your chances of success.
- **Other smokers.** Being with smokers or in smoking environments can make you want to smoke.
- **Bad mood or depression.** There are a lot of ways to improve your mood other than smoking.

5. QUESTIONS AND ANSWERS TO THINK ABOUT

- **"Smoking is a personal decision and does not affect anyone else"**

This idea does not reflect reality, there is consistent evidence about the harms of passive smoking. Non-smokers who are exposed to cigarette smoke have an increased risk of lung cancer and cardiovascular diseases.

- **"If I have to die one day, what's the point of living a little longer as a retired person if I can't enjoy smoking until then?**

Smoking causes long term diseases affecting the quality of life considerably. Moreover, we are not talking about shortening life by a couple of months but by about 10-15 years.

- **"When I am stressed smoking relaxes me"**

A smokers is nicotine dependent and that is why smoking makes himself relaxed. However, nicotine is a stimulant drug and increases heart rate, blood pressure and adrenaline levels. Some weeks after quitting, many smokers are less nervous and learn to relax without smoking, exercising self-control.

- **"How long will the abstinence syndrome last?"**

Abstinence syndrome starts four to five hours after stopping smoking and lasts about eight to ten weeks. The intensity is normally highest from week one to week four and reduces significantly from the sixth week.

- **"I have been a smoker for many years and I cannot possibly quit but I am going to reduce the number of cigarettes I smoke"**

Both smokers with short and long history of consumption benefit greatly from quitting. Reducing the numbers of cigarettes is on occasions more difficult than quitting. Smokers tend to inhale more strongly to compensate the lack of nicotine. In the long term they tend to increase the number of cigarettes again.

- **"Is it less dangerous if I smoke low tar cigarettes?"**

Smokers compensate for the different nicotine levels by modifying their inhalation patterns and the level of absorption is similar to regular cigarettes.

- **"If I quit smoking, will I put on weight?"**

Some people replace cigarettes with food when they give up and therefore may put on some weight (around 2 kg) but those are easy to loose if you do some exercise. Eat a healthy diet and stay active. Don't let weight gain distract you from your main goal—quitting smoking. Some quit-smoking medications may help to delay weight gain.

- **"If I quit smoking I will be more nervous and I won't be able to carry everyday activities"**

Abstinence syndrome has a clear patter during a limited period of time. After that, there are only benefits. To avoid irritability and anxiety you can use relaxation techniques such as deep breathing. Once smokers overcome dependence they gain self control and are less nervous than when they used to smoke.

FOR MORE INFORMATION

Visit the following webpages:
http://www.atencionaltabaquismo.com
http://www.cnpt.es
http://separ.es
http://www.unav.es/enfermeria/UnivesidadSaludable/proyecto.html

This book has helped many smokers to quit:
Alenn Carr (2001) *Easy Way to Stop Smoking.* Madrid: Espasa Calpe

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